PARTNERSHIP APPROACH TO SOLID WASTE MANAGEMENT, CASE STUDY OF SOKOTO METROPOLIS

By

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DECLARATION

I hereby declare that this thesis has been composed by me and that it is a record of my own research work. It has not been accepted in any previous application for a higher degree. All sources of information are appropriately acknowledged by means of referencing.

Yahaya Abubakar

22/3/2010
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CERTIFICATION

This thesis titled ***"Partnership Approach to Solid Waste management: Case Study of Sokoto Metropolis"*** by Yahaya Abubakar meets the regulations governing the award of the degree of Master of Science of Ahmadu Bello University, Zaria and is approved for its contribution to knowledge and literary presentation.

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DEDICATION

To

My Father,

Late Abubakar III

May he continue to rest in peace (Ameen).

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ABSTRACT

This study is concerned with fashioning out a partnership approach to solve the problem of solid waste in Sokoto metropolis once and for all. The management of solid waste has been deteriorating and it has become clear that government can no longer shoulder the responsibility alone due to poor resource base and management capacity. Government has acknowledged its limitation by instituting a participatory strategy comprising of participants drawn from both the private and community sectors. This strategy which could have eased the problem is however coercive and poorly co-ordinated. It is thus ineffective and has not succeeded in solving the problem. The existing management system was examined and was found to be structurally defective and beset by inadequacy of resources. In proposing a sustainable solution, potential partners including those involved in the current strategy as well as others, were assessed and on the basis of the assessment were assigned roles in a new strategy. The study recommended the decentralization of the waste management system, and the adoption of a bottom-up community based approach to harness and integrate communal and informal efforts with the official waste management system. A framework for the participation of the various partners was also proposed.

CHAPTER ONE

1.0. INTRODUCTION

Cities, particularly in developing countries are increasingly unable to provide infrastructure services. Problems being encountered in solid waste management and other infrastructure services have been linked to the growth and development of cities. According to Ford (1992), rapid urban population growth has been straining the capacity of governments to provide infrastructure service, and that it is rare to find agencies in developing countries responsible for investments in infrastructure and services with the real authority and resources to provide them.

That may well be so, but as observed by Dedehouanou (1998), the scale and scope of environmental problems relates more to how government and other actors of the urban scene respond. As governments are increasingly constrained in environmental management, sustainability of any management system will lie in greater stakeholder participation, cutting across the public, the private and the community sectors (UNHCS, 1994; Schubeler, 1996), and with regards to the solid waste problem, promotion of recycling. The private sector (specifically the informal sector) is recognised as already active in recycling urban organic wastes for agriculture. As noted by Smith and Nasr (1992) urban agriculture is the largest and most efficient tool available to transform urban wastes into food and jobs, with by products of an improved living environment, better public health and urban

management cost reduction.

The current solid waste management crisis being faced in the country is an indication of the failure of the existing management systems. For improvements therefore, pursuing the management options of partnerships and recycling in effective waste management is not only desirable, but necessary. Government must provide an enabling environment to promote these practices in the management system.

1.1. STATEMENT OF RESEARCH PROBLEM

The problem of managing solid wastes has over the years continued to be a source of great concern. Lack of adequate services manifest in accumulated piles of wastes, pollution and the spread of diseases. The situation in Sokoto once regarded as the cleanest capital city in the country, has taken a turn for the worse, with many parts of the town not getting regular, if any attention at all. Government has attributed the current situation to the inadequacy of funds to buy the necessary equipment needed for waste collection and disposal, and the increasing uncooperative attitude of the public in keeping the environment clean.

In 1989, the state government created the Environmental Sanitation Task Force Committee (ESTF Comm) to assist the Sokoto Urban Development Authority (SUDA), the agency then responsible for the function of solid waste management, in order to discharge its duties effectively. Government's other effort centred on involving other participants from the public, the private and

these stakeholders that come from the public, the private and the community sectors, as each has distinct contributions to make (Landry, 1996). What is required therefore, is an innovative strategy that will involve all the stakeholders in tackling the problem.

This research is aimed at working out an effective partnership strategy for the management of solid waste in Sokoto metropolis. This is to be done after an examination of the existing management practices and the concept of the partnership approach. Ways of adapting the approach to the situation in the study area will then be identified.

1.2. JUSTIFICATION AND SIGNIFICANCE OF THE STUDY

Failures in managing the problem of solid waste are mostly explained as emanating from inadequacy of resources without really looking into the management framework and practices and identifying the deficiencies. There is the need to look into this and then identify the stakeholders in Sokoto, whose interests are complimentary to the ESTF Committee (the agency responsible for waste management) in areas of observed deficiencies, and then come up with a workable framework, based on individual stakeholders capabilities.

1.3. AIM AND OBJECTIVES

The aim of this work is therefore to examine the existing solid waste management strategy in Sokoto metropolis with a view to evolving an effective partnership framework for solid waste management. This is to be achieved through the following

objectives:-

1. To examine the concept of the partnership approach and its role in infrastructure service delivery.
2. To examine the existing solid waste management framework and its problems.
3. To examine some households socio-economic characteristics, and waste disposal practices in the study area.
4. To identify the effective partners for solid waste management in Sokoto including their resources.
5. To make proposals for a viable solid waste management strategy in Sokoto metropolis.

1.4 METHOD OF DATA COLLECTION

The data and information used in this research was obtained through the following means:-

1- Review of relevant literature.

2- Questionnaire and interview schedules administered to identified stakeholders from the public, the private and the community sectors.

A household survey was undertaken, and using the stratified random sampling method, a questionnaire was administered in five zones of the study area. In all, 400 questionnaires were administered and responses collated from 334 households were used to arrive at the result of the survey.

3- A reconnaissance survey of the study area was carried out in order to get additional information on the situation on the ground. Photographs were also taken, and some are featured in this report.

4- Population census extracts for the study area were obtained from the National Population Commission, and maps from the Lands and Survey Department, Sokoto.

1.5 THE STUDY AREA

Sokoto was founded in the early 19th century and was the administrative capital of the Sokcto Caliphate. With the advent of colonialism, it was made the headquarters of Sokoto Province. It was also the capital of North Western State when the 12 states structure was adopted for the country in 1967. Sokoto has retained its capital city status to the present day even with the subsequent creation of Niger State out of the old North Western State in 1976, and Kebbi and Zamfara States from the old Sokoto State in 1991 and 1997 respectively. Figure 1.0 shows Sokoto metropolis - the study area.

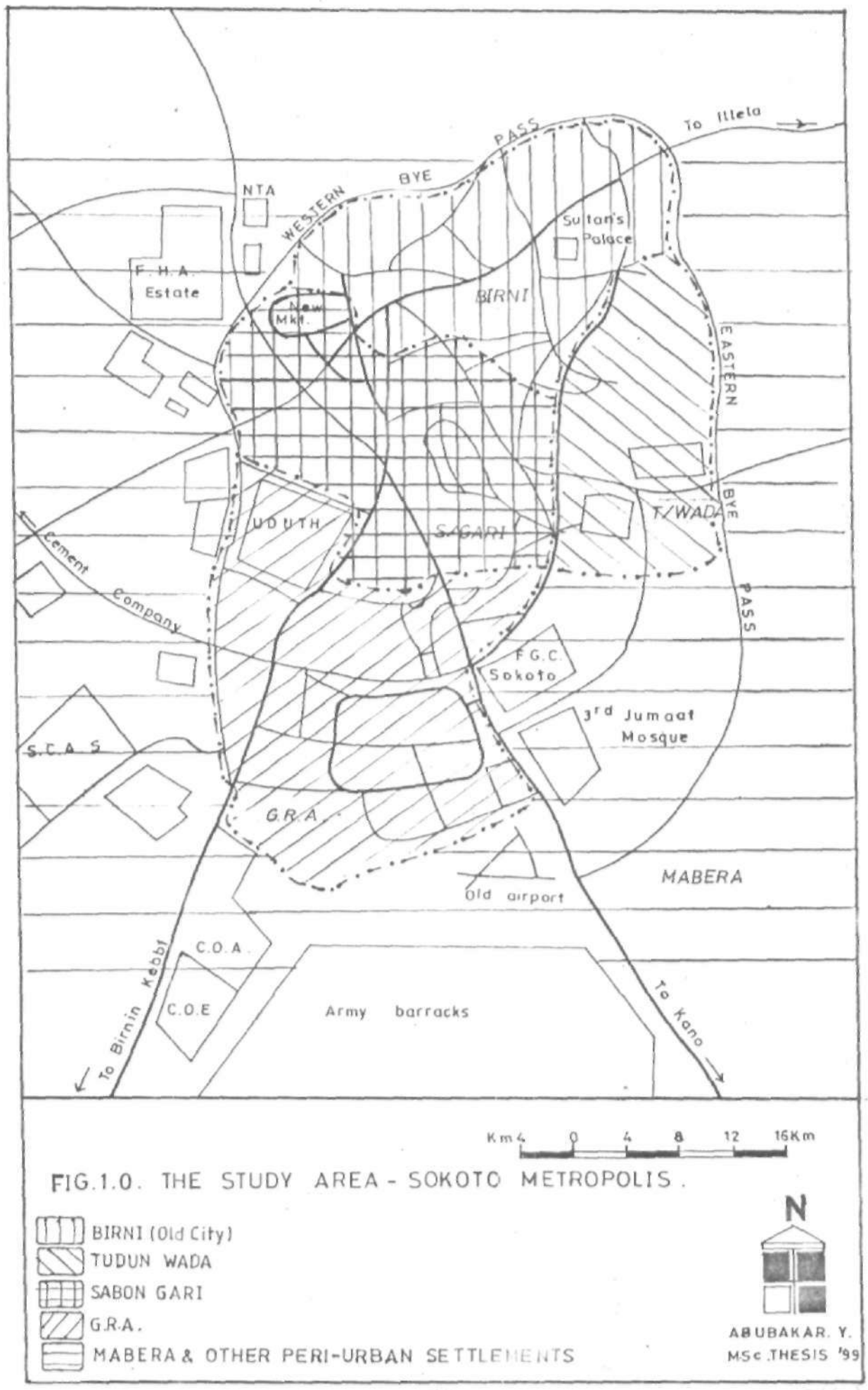


FIG.1.0. THE STUDY AREA - SOKOTO METROPOLIS.

CHAPTER TWO

2.0. THE CONCEPT OF THE PARTNERSHIP APPROACH AND IT'S ROLE IN SUSTAINABLE INFRASTRUCTURE SERVICE PROVISION

2.1. TRADITIONAL URBAN MANAGEMENT AND IT'S LIMITATIONS IN INFRASTRUCTURE SERVICE PROVISION

It has been observed that the management systems and practices in most cities are inimical to the demands of sustainable development. As observed by the UNCHS (1994), the policies, laws, institutions and established ways of doing things in most cities of the developing world are increasingly ill-suited to the demands of sustainable development in the modern world. It sees the dramatic pace of demographic, economic and social change as severely overburdening their capacity to provide infrastructure services effectively, with inadequate funding and the rapidly evolving needs and problems.

Generally, the traditional supply orientation to infrastructure policy has according to Schuttenbelt, et al. (1994) "...tended to emphasise public sector provision and the excessive political involvement in decision about investments and pricing of services. The result has been inadequate operation and maintenance, non-sustainability and unreliability of services, constraints to economic productivity and environmental degradation".

Generally, the typical weaknesses of these management systems include the following:-

- Chronic failures in inter-departmental, cross sectoral and inter governmental cooperation and collaboration
- Lack of effective strategic planning capabilities
- Outdated and ineffective urban planning
- Inadequate mechanisms and practices for meaningful public participation
- Lack of modalities for public-private collaboration
- Weakness in municipal public finance
- Shortage of appropriate skills and experience, and
- Inadequate information availability

2.2 THE CONCEPT OF PARTNERSHIP IN INFRASTRUCTURE SERVICE PROVISION

The partnership approach has been gaining wider currency with the increasing and mounting evidence that governments are no longer able to discharge their functions with regards to infrastructure services delivery due to poor management capacity and dwindling resources. The partnership approach embodies a number of general principles that are designed to overcome the limitations associated with the traditional approach to urban administration and management system in the provision of urban infrastructure services. It broadens the range of actors involved in the provision of services to include those identified as "stakeholders" in the process of the provision of such services. It is a strategy that seeks to ensure that the resources and potentials of the different stakeholders in the development process are exploited in a mutually supportive way, in order to achieve what would not have been possible

independently.

The stakeholders according to the UNCHS (1994) include those whose interests are affected those who posses relevant information and expertise, and those who control relevant implementation instruments. Harnessing the resources and potentials of these partners, it is hoped will lead to improvements in the provision of infrastructure services and sustainability.

2.3. THE PARTNERS AND THEIR EXPECTED ROLE

The partners can be broadly classified as coming from three groups, viz; the public sector, the private sector and the popular or community sector. Each of these stakeholders is seen as enjoying a comparative advantage in the performance of certain roles, as outlined below:

2.3.1. The Public Sector

This sector comprise of government institutions that are directly or indirectly involved in providing and managing urban infrastructure services. The role of this sector as seen by Schuttenbelt, et al. (1994) is "...to create competitive pressures for more effective and efficient service delivery..." it should, further "...enable, facilitate, regulate and monitor partnership arrangement". Batley (1994) also sees the role of government as ensuring that essential goods and services are provided, but not aim to be the sole provider. Direct provision of infrastructure service by this sector is to be de-emphasized. Government should directly supply services only where necessary.

In the words of Batley (1994), for partnerships to succeed, "...government must have the capacity not only to make initial diagnosis and assessment to decide how services should be supplied, but also to administer the state's role once they have been established. Government is to set broad frameworks of policy standards; manage and enforce contracts; regulate monopolists, coordinate, finance and support producers; enable community self-provision, and support consumers with information and alternatives".

2.3.2. The Private Sector

This sector consists of the formal and the informal;

2.3.2.1. *The formal Private Sector*

This sector is seen as having an edge over the public sector in the provision of infrastructure services. For one, it has access to financial resources more readily. Secondly, it has the potential ability to operate more efficiently, (Schuttenbelt et al 1994). It can, therefore play a role in financing and providing certain infrastructure services. Unlike the public sector, the private sector is driven by the profit motive. This sector can only be involved in the provision of services that users need and are willing and able to pay for.

The privatization of certain infrastructure services is seen as the key to reform and the solution to urban infrastructure provision problems. Given their potential for lower production costs, improved efficiency in service delivery and greater capacity to maintain capital equipment private enterprises have

advantages over governmental agencies. Cheema (1996) sees many government and development agency initiatives focussing on the role of private initiatives to improve the delivery of urban services. He however sees the need for a regulatory framework that protects the interests of the public, particularly the poor, and that incorporates safety and environmental concerns.

2.3.2.2. *The Informal Sector*

This sector is recognised as already being involved in many aspects of services particularly in low income areas, for example in the recycling of solid waste. Many families make a living out of this sector which is made up of door to door collectors and "scavengers" at waste collection depots and traders and dealers in waste materials.

The potential role of this sector in partnerships should be recognised. Their efforts could according to Schubeler (1994) be channelled through the formation of micro-enterprise to deal with recyclables through community initiatives. Gidman (1996) sees the activities of this sector as going largely unrecognised and not being well integrated in the formal system. Partnerships between the government and the community could improve the performance of the activities of the informal sector by recognising, assisting and organising these informal groups.

2.3.3 The Community Sector

This sector, also known as the popular sector comprises the community and it's representatives in the form of NGOs and CBOs. The existence of strong and vibrant civil organisations like NGOs

and CBOs is a most crucial factor in effective popular participation and by extension, sustainable development (Cheema, 1996). The salient characteristics of these organisations are discussed below:

2.3.3.1. *NGOs*:

These are private, voluntary, non-profit making organisations that operate independent of national governments. They are composed of professionals and are known to provide support to community based development, serve as technical instruments between the government and the people, advocate, create public awareness and generally serve as catalysts for development in collaboration with CBOs.

2.3.3.2. *CBOs*:

These normally take root from communities and most community initiatives are channeled through them. A CBO is usually an organisation of people with common interests, activities and functions. Factors underlying the formation of such organisations usually include residential and developmental security, environmental quality and social services. These organisations make up for their lack of sophistication and strong financial base through their creative energies.

2.4 REQUIREMENTS FOR PARTNERSHIP

Even with the desirability of partnerships, public sector agencies may not have legislative, administrative or political support to enable it as part of the process of infrastructure services delivery.

According to the DFID (1998), it is rare to find or an agency with the systems, structure, skills or staff to enable partnerships. There is also a great deal of skepticism about the value of partnership, particularly with regards to NGOs which are regarded with suspicion. There is also lack of capacity and vision within such agencies to sustain partnerships. Therefore, a great deal of capacity building and attitudinal change is needed to make participatory processes possible and sustainable. The following requirements are therefore necessary:-

. Supportive legislative and administrative context to enable and facilitate partnerships.
. Coordination and (visionary) leadership (Foranda, 1998).
. Capacity building in institutions involved in the process of infrastructure delivery, and development of local expertise.
. The presence of strong and vibrant civil society organisations.

2.5 MERITS OF THE PARTNERSHIP APPROACH

From experience, a lot of benefits have accrued from partnerships, and according to Schubeler (1996) even though not a panacea, partnership can significantly contribute to more efficient and more sustainable urban infrastructure service provision and management. Some of the merits of this approach are:

. Cost reduction through the mobilisation of resources from the participation of other stakeholders during project

implementation.

- In partnerships, it is possible not only to improve services, but also the livelihoods of the people through poverty alleviation measures. For instance, the formation of micro-enterprises in waste reuse and recycling.
- With support from government and voluntary organisations, partnerships have played a vital role in enhancing people's capacity to manage their local affairs.
- Partnerships tend to expose the real needs of the people, this according to Schubeler, helps in targeting of project measures to such needs, enhancing user ownership efficient use, better maintenance, and more reliable operations.
- Partnerships ultimately leads to greater sustainability.

2.6 PARTNERSHIPS AND SUSTAINABILITY

As observed by the World Bank (1997), there is a lot of evidence that government programs work better when they seek the participation of potential users, and when they tap the community's reservoir of social capital rather than work against it. Benefits show up in smoother implementation, greater sustainability and better feedback to governmental agencies. This is in contrast with top down approaches, which it says often fail. Also, the World Bank (1994) sees the involvement of users and beneficiaries of development as crucial to sustainability. In it's words, "People are the ultimate beneficiaries of development and if it is to succeed, they should become it's active agents and not it's passive beneficiaries. The people

aided, guided and led by government must be the mentors of the process of change, if such change is to become internalized and sustainable". However, finding the right division of labour between the government and the user communities, is crucial to the success of partnerships.

In line with overall call for sustainability and sustainable development, a lot of researchers have written on the need for solid waste management systems to become more sustainable. Tamamashi et al. (1998) have observed that solid waste management will become more sustainable if it is environmentally improved, economically affordable and socially acceptable. In this regard, they see the need to produce less wastes in the first place, and secondly, the need for an environmentally and economically efficient system to manage the wastes that are still produced. What is needed, they argued, is a waste management and recycling systems which are integrated into a society.

Pacheco (1992) also spoke on the need to promote a waste management system which has social as well as ecological goals. Such a system should promote separation of wastes to facilitate more efficient recycling, including decentralised compost making, develop community/private sector/municipal partnerships, and accommodating informal activities in waste recovery and recycling, and assisting poor people whose livelihood depend on wastes to do safer, more acceptable work. To achieve this however, she sees the need to change the traditional structure of the management of solid waste so as to give civic

organisations and teaching institutions a key role.

2.7 CASE STUDIES OF PUBLIC-PRIVATE PARTNERSHIPS

The concept of participatory infrastructure development is certainly not new. In rural development, community participation has been recognised as an essential component since early 1950's. In urban areas however, it has lagged behind, particularly in the developing world. However, there are several instances of public-private partnerships in the provision and management of infrastructure services in many developing countries. A lot of improvements were recorded in the provision of such services through the developed partnerships. Following are some case studies:-

2.7.1 The Kampung Improvement Programme, Indonesia

The Kampung Improvement Programme in Surabaya, which is essentially a neighbourhood improvement programme, addresses the basic infrastructure needs of the low income urban population. According to Silas (1992), success was achieved by mobilizing the people's own resources and by increasing their awareness of the importance of a clean and healthy environment. The idea behind the programme is that it is only by linking the public sector and the community that sustainable local development can be achieved. Both the public sector and the community contribute to the success of the project through commitment of time, labour and funds. Planning and implementation stages are closely monitored by community leaders and local government officials. The limited resources available to government are augmented by contributions

from the community, which in the words of Silas (1992), "are a strong asset to the programmes sustainability".

In order to ensure regular waste collection service, each Kampung (or neighbourhood) arranges for their own local collection services and directly pay the labourers/street sweepers who serve therm. In this way, a workforce of about 12,000 waste collectors/street sweepers are paid by the people of Surabaya. These workforce supplement the 1,300 street sweepers and cleaners paid by the local government.

This strategy succeeded largely due to the integration of "bottom-up" and "top-down" approaches, and the participation of the community in the planning and implementation stages of the programme.

2.7.2 Private Sector Solid Waste Collection in Porto Alegre, Brazil

This case study is an example of partnership between the government and voluntary organisations. Waste collection in the city of Porto Alegre, a city of nearly one million inhabitants is fairly well developed. Close to 80% of the population is said to be served.

In 1990, the city launched a programme of waste recycling in order to reduce the volume of materials for disposal. Additional objectives of the programme were to provide employment and improve the micro-ecological balance of waste management. The official programme collects 20.4 tons of recyclables daily or 3.4% of total households waste generated in the city. Remarkably however, private sector scavengers, consisting of some

5,000 organised groups collect about 4 times the amount of recyclable as the official programme.

This was largely possible due to the cooperation of the local government and the support of church groups and NGOs. Also, with such support, 5 associations have been formed since 1991 with the main objective of improving the marketing of recyclables and also ensuring steady income to members. Apart from the initial objectives, the programme has significantly reduced the task of the municipal waste disposal agency.

2.7.3 Recycling Waste for Urban Agriculture, Jakarta Indonesia

This case study shows how solid waste management problem can be solved by viewing the wastes produced from urban centres as 'resources'. In this case, wastes produced from a race track are recycled by farmers together with other wastes from the surrounding high income neighbourhod. The wastes are sorted at a station within the farm. Glass, metal and clothes etc, go to a recycling centre and organic material is composted on site, and subsequently used on nearby farms. Thus, what goes to landfills is very limited and jobs and fresh food are generated within the community.

2.8 DELIVERY STRATEGIES OF PARTICIPATION

Four (4) key strategies of participation have been identified by Schubeler (1996) these according to him range from government involvement in community based development activities, to people's participation in government directed management functions. He sees these approaches as in no way being

exclusive, and are often taking place simultaneously. These strategies and some of their salient features are outlined below:-

2.8.1 Community Based Strategy

This relies largely on community initiatives and existing CBO's are at their centre. The main objectives here are to support the local development of infrastructure services and to enhance the community's capacity to manage services development. This is essentially a 'bottom up' approach to development. The main advantage of this approach is that the local partners have a very strong sense of ownership of the development project. It also enhances creative learning and the community's potential for self organisation.

The drawbacks to this approach arise from its inability to introduce representative and functionally oriented organisations. It also faces difficulties in linking locally developed infrastructure systems to municipal networks. It is also rarely able to mobilise more than a moderate volume of resources.

2.8.2 Area Based Strategy

This is also known as the involvement strategy. Activities here are normally government-managed and structured with regards to a particular area to be provided with services or upgraded. The main objectives are to improve the cost effectiveness and efficiency of development activities through appropriate inputs into the development process by people concerned. An advantage of this approach is that it is well suited for channeling larger

volumes of resources and ensuring more effective linkages between local level development and municipal systems. Some of the disadvantages include loss of community ownership and poor cost recovery.

2.8.3 Functionally-Based Strategy

Collaboration is the key word here. It is a more advanced form of public-private partnership than the previous two strategies. Here, rather than one stakeholder providing input to or participating in activities directed by the other, activities are organised based on clearly designated areas of responsibility for each stakeholder.

The major strength of this approach is in the relatively high level of empowerment of participating community groups. Loss of project 'ownership' and poor cost recovery do not become problems because project implementation and financing remain clearly in community hands.

However, there are difficulties concerning coordination and linkage between the internal facilities and the government sponsored external facilities.

2.8.4 Process Based Strategy

In this strategy, activities are also government sponsored. But unlike in the area based approach, it is not merely a specific area, but the entire process of infrastructure service management that forms the basis of activity organisation and normally on a city wide scale.

People both as users of infrastructure service management and as citizens participate by way of specific inputs to government directed management activities. The focus of decision making is decentralised, shifting invariably towards local bodies.

One advantage of the approach is in the mobilization of creative capacities at all levels of society, and its productive use of available capacities and potentials.

CHAPTER THREE

EXISTING FRAMEWORK FOR SOLID WASTE MANAGEMENT AND PROBLEMS ASSOCIATED WITH IT

3.0. INTRODUCTION

The purpose of this chapter is to undertake an examination of the existing management framework for solid waste in Sokoto metropolis. The various components of the framework i.e, the institutional and financial frameworks will be examined, as well as existing participatory strategy. At the end, the problems that limit the success of the current management framework will be highlighted.

3.1 EXISTING INSTITUTIONAL FRAMEWORK

There has been a lot of instability in the institutional arrangements for managing the problem of solid waste in Sokote, a problem that currently exists all over the country. Solid waste management is constitutionally the responsibility of local government councils as enshrined in the 1979 constitution of the Federal Republic of Nigeria. However this function has been taken over by state governments in most urban centres, particularly the state capitals. Under this arrangements, waste management is undertaken by boards or refuse disposal agencies funded by the state. For instance, it is the responsibilty of the Lagos Waste Management Authority (LAWMA) in Lagos, in Kano it is handled by the Refuse Disposal Agency (REDA) and in Kaduna by the Kaduna Environmental Protection Agency (KEPA). In Sokoto, it is currently under the management of the Environmental Sanitation

Task Force Committee (ESTF Committee). Under this arrangement, the state spells out the roles it expects the LGCs (and other actors) to play.

The current arrangement that exists came about due to the inability of the LGCs to handle the function satisfactorily. The LGCs in Nigeria and indeed globally as noted by UNCHS (1994) lack the required capacity in terms of finance, equipment and human resources for waste management. The states' usurpation of the LGCs' function in waste management, even though with reason, is unconstitutional. It has also not succeeded in solving the problem, as evidenced by the continued outcry over the increasing mountains of wastes in most of the major cities.

In Lagos, LAWMA is trading accusations with the LGCs on who is responsible for the current deplorable state of affairs in waste management. LAWMA accuses the LGCs of not doing enough in street sweeping, creation of adequate refuse dumps and being irregular in paying the fees it (LAWMA) charges them for waste disposal. The LGCs on the other hand, accuse LAWMA of inefficiency, and not evacuating collected waste at appointed time. In Kano, despite increased funding, REDA has not succeeded in keeping the metropolis clean. In fact things have worsened.

3.1.1 Institutional/Administrative Changes in Solid Waste Management in Sokoto Metropolis

Over the past years, the function of solid waste management in Sokoto has been moved from one place to the other. From independence in 1960 to 1969 it was under the Sokoto Native

Authority. It continued to handle the function as Sokoto Local Government Authority up to 1971, following administrative reforms carried out in 1969. When the Sokoto Metropolitan Planning Board was created in 1971, the function of waste management was shifted there. This arrangement continued until 1973 when the board itself was scrapped, and the function was moved to the Ministry of Health. In 1976 SUDA was formed, and the task of managing solid wastes was moved to it. The responsibility was briefly moved to the Ministry of Housing and Environment in 1982, and this new arrangement lasted for only one year before waste management was again moved to SUDA. It continued handling it until 1995 when it (SUDA) transformed to the Sokoto Urban and Regional Planning Board (SURPB) through Edict No.19 of 1995, and the job was moved to the ESTF Committee. The committee performs this function through the Health Department of the ex-SUDA, whose staff are now paid their salaries by the management of SURPB.

The institutional instability in waste management in Sokoto shows that government doesn't know exactly what to do about it, as the problem increases.

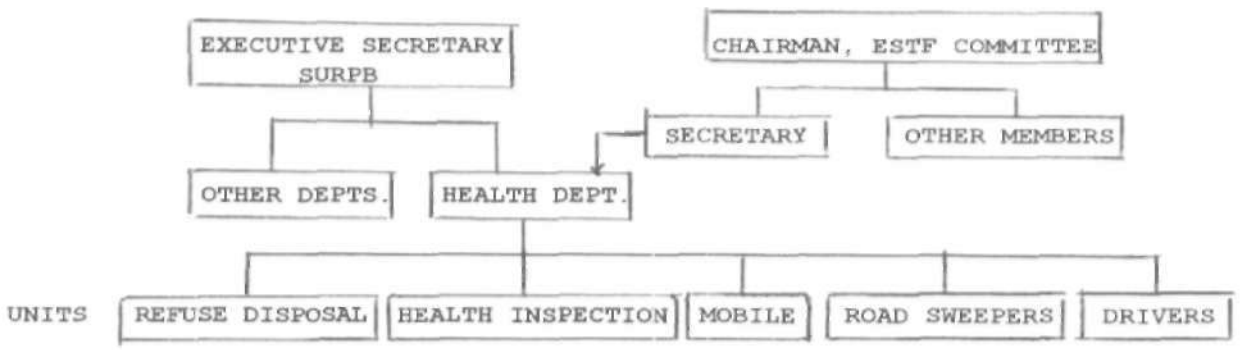
3.1.1 Organisational Framework

The ESTF Committee is the body responsible for waste management. Its membership is drawn from the SOSEPA, Land and Survey Department, the National Union of Road Transport Workers (NURTW), the 5 LGAs under Sokoto metropolis and the SURPB which has two (2) members, including the secretary. The chairman is a police officer. Apart from its day-to-day function of refuse

collection and disposal in the metropolis, the committee is also charged with additional responsibility of monitoring the environmental sanitation in the remaining local governments of the state.

The ESTF Committee performs its function through the Health Department of the ex SUDA, which isn't really sure whether it belongs to the new SURPB or the ESTF Committee. On the one hand, it is under the command of the committee, while on the other, the SURPB pays its staff salary. Figure 3.1 shows the Organisational framework for managing solid waste in the study area.

3.1: Organisational Framework for Solid Waste Management in Sokoto



Source: *SURPB, Health Department (1998)*

3.1.2 Staff And Their Responsibilities

The Health Department has 247 staff, shared into five (5) units as shown by table 3.1. The refuse collection and the road sweepers units have the highest number of workers with 36% and 35% respectively. This workforce is mostly poorly educated with over 80% of the workers with primary school or non-formal education. Also, over 97% of the workers earn between ₦1,000-

₦2,000 monthly, while the remaining 3% earns between ₦2,500-₦3,000. Table 3.2 gives the full detail of staff, qualification and monthly salaries.

Table 3.1.: No of Staff/Unit

Unit	No. Of Staff	% of Total
Health Inspection	19	7.7
Refuse Collection	89	36.0
Road Sweepers	87	35.2
Mobile	25	10.1
Drivers	27	10.9
	247	100.0 %

Source: Health Dept. 1998

Table 3.2.: Staff Qualification & Salary

Designation	No.	Qualification	Salary ₦/Month
Head of Unit	6	Diploma, Certificate	2,500 - 3,000
Health Supt.	18	School Certificate	1,500 - 2,000
Supervisors	8	School certificate	1,500 - 2,000
Drivers	28	Primary, Non formal	1,000 - 1,500
Labourers	187	Non formal	1,000 - 1,500

Source: Health Dept. 1998

3.2 FINANCIAL FRAMEWORK

The ESTF Committee largely depends upon government subvention, and gets a sum of =N=200,000.00 monthly. It gets an additional ₦100,000.00 monthly by charging the 5 local governments ₦20,000.00 each. The committee therefore gets a total of ₦300,000.00 monthly and ₦3.6 million annually as running expenses. When this function was being performed by SUDA it was funded from the collective subvention of the agency and was therefore not fixed as is the case now. Table 3.3 shows the

budgetary allocation trend for solid waste management in Sokoto between 1992-1998.

Table 3.3: Budgetary Allocation Trend (in millions ₦)

Year	Source		Total
	State	LGA's	
1992	2.2 m	-	2.2 m
1993	1.5 m	-	1.5 m
1994	4.2 m	-	4.2 m
1995	1.2 m	-	1.2 m
1996	2.4 m	1.2 m	3.6 m
1997	2.4 m	1.2 m	3.6 m
1998	2.4 m	1.2 m	3.6 m

Source: ESTF, 1998

3.3 EQUIPMENT USED FOR WASTE COLLECTION AND DISPOSAL

Currently, the ESTF committee is facing shortage of equipment. Most of the equipment being used for waste collection and disposal was purchased between 1978 to 1984. All the equipment have therefore since exceeded their normal working life span, which is about 7 years. Table 3.4 gives a breakdown of the equipment and those in working order used for collection and disposal of wastes in the study area.

Table 3.4.: Waste collection & Disposal equipment

Type of Equipment	No.	Year of Purchase	No. Working
Tippers	16	1978/84	5
Payloaders	2	1978	1
Tractors	7	1978/84	2
	25		8

Source: SURPB, ESTF Committee, 1998.

In addition to the above, the committee has several wheelbarrows, headpans, rakes, cutlasses and other supporting equipment.

3.4 SYSTEM OF REFUSE COLLECTION AND DISPOSAL

Waste collection and disposal is done six (6) times a week. Currently, waste collection is done from neighbourhood depots built for households to dump their wastes. House to house collection was officially stopped in 1990 due to financial constraints. Even then it was limited to the GRA. Inevitably however, it has continued, where households now dump their wastes outside their fenced areas in the absence of official collection depots or containers, thereby creating illegal depots.

3.4.1 Official Collection System

The existing official collection systems is not planned and is done on ad-hoc basis. In the 80's the town was divided into 8 zones (A - H) and the shift system was used in collecting and disposing of wastes. Collection crews were assigned shifts in covering the various zones. By 1990, the zones were scrapped, and so was the shift system, due to the increasing inadequacy of equipment, manpower and resources. From then onwards, the metropolis is covered as a single unit. Collection is now mostly done in highly visible areas, where waste is easily seen to have accumulated and in response to lobbying from influential people in order to clean up their neighbourhoods.

As a result of this, many areas which are not very visible

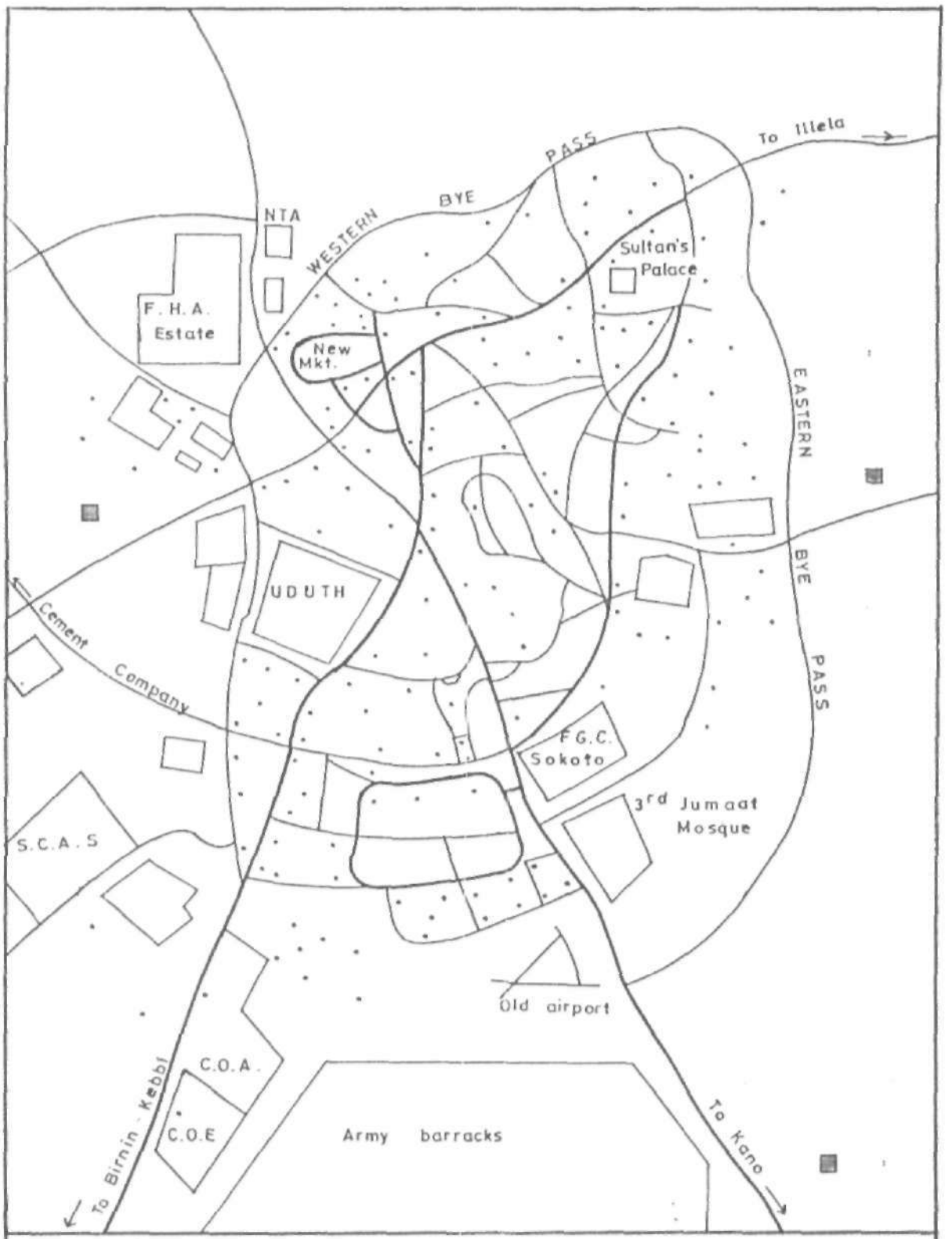


FIG. 3.4. LOCATION OF REFUSE DEPOTS AND FINAL DISPOSAL SITES.

and accessible in particular densely populated neighbourhoods in the old city (Birni), T/Wada and Sabon Gari are mostly left unserviced. The inadequacy of resources also resulted in the reduction of the officially designated refuse collection points from 312 in 1995 to 232 in 1996, a reduction of 80 depots, 69 being from the aforementioned areas. Figure 3.2 shows the location of the collection depots.

Once the waste is collected by the collection crews, it is supposed to be taken to any of the three (3) officially designated final disposal sites whose locations are also shown on figure 3.2. However, most of the waste ends up in farmlands located at the fringe areas of the metropolis, and even beyond. The collection crews have an arrangement whereby they sell organic rich waste to farmers.

3.4.2 Private Individuals and Informal Sector Collection

Private individuals and informal sector collection of waste has been going on in the metropolis for some time now, and is mainly focused on supplying organic waste for farming and the sell of inorganic recyclables like metals, plastics and bottles to industries as far away as Kano and Ibadan. In essence, therefore, their activities are not concerned with environmental sanitation, but rather commerce. Notwithstanding, some areas that are completely left out of the official collection routine i.e the peri-urban areas of Arkilla, Kalambaina, More and the Kwannawa-Mabera area, benefit from the activities of these groups as it is the only way that waste gets collected and disposed to

compliment communal efforts. The peri-urban areas are not covered by the ESTF committee (even though they fall within their mandate, i.e Sokoto metropolis) due to inadequate personnel and equipment. It must however be noted that the core areas of old city (Birni), Tudun Wada and GRA are also covered by these informa groups.

3.5 EXISTING "PARTNERSHIP" STRATEGY

By 1989, SUDA the agency then responsible for solid waste management was finding it increasingly difficult to cope with the growing problems of solid wastes. The agency was facing shortage of equipment, inadequate manpower and finance. In order to solve the problem, it started appealing for 'donation' of vehicles (trucks/tippers) erection of waste depots and provision of skips by the business community and greater public participation and cooperation by the city residents. The state government in the same year formed the environmental sanitation committee with the then Sokoto Local Government, SUDA, Ministry of Health and Military and Police personnel as members. This was essentially to help enforce SUDA's regulations on sanitation and temporary structures. The arrangement was further enlarged in 1994 with the admission of the National Union of Road Transport Workers (NURTW) in the committee, with a member of the Tipper Owners Association (TOA) a subsidiary organisation as the representative.

When SUDA transformed to SURPB in December 1995, the ESTF committee took over the waste management function of the defunct

SUDA. The new SURPB however retained the 2 positions of the ex-SUDA on the ESTF committee, i.e one member from the Town Planning Department, and the secretary of the committee. The newly created SOSEPA was also admitted into the committee. The ESTF committee was mandated by the state government to charge each of the five (5) local government areas that fall within the metropolis the sum of ₦20,000 monthly to augment its government subvention. The LGA's were also instructed to assist the various CBO's in their domains in order to enhance their participation in the bi-monthly environmental sanitation exercise. Table 3.5 gives a breakdown of the participants and their roles in the existing waste management strategy.

3.5.1. Limitations of the Strategy

The strategy has not been successful probably because the roles assigned to each of the partners were not based on a proper assessment of their resources and capacities. The ESTF committee has also not been coordinating the activities of the different partners. As it is, the members of the committee hardly ever meet. The operations are ad hoc and based on the whims of the Chairman, who is a police officer. The other members of the committee are not treated as real partners and are hardly ever consulted before any decisions are taken. Broad-based consultations (UNCHS, 1994) is one of the requirements for a successful partnership framework. In real sense therefore you can not call the existing arrangement a partnership.

There is growing disenchantment with the current

arrangement. The five LGCs are not happy about the money they are made to pay to the ESTF committee without seeing any appreciable impact; money they fell they can utilise better.

Table 3.5.: Existing Partnership Strategy

No.	Participant	Functions Assigned	Level of Performance
1.	ESTF Committee	1. Collection and disposal of waste in the metropolis. 2. Fueling of vehicles donated during san. exercise. 3. Construction of waste collection bunkers. 4. Health and sanitary inspection. 5. Road sweeping and maintenance of open spaces 6. Policy formation.	Irregular Irregular Poor Poor Irregular Poor
2.	5 L.G.As.	1. Payment of N20,000.00 fee monthly to ESTF. 2. Assisting CBO's with working implements 3. Enlightment campaigns through ward heads.	Regular Irregular Poor
3.	SURPB	1. Provision of sites for refuse bunkers. 2. Repair of vehicles/equipment. 3. Payment of Health Dept. Workers salaries.	Based on request from ESTF Fair Regular
4.	SOSEPA	1. Public enlightment campaign - seminars, W/shops, stickers etc.	Irregular
5.	NURTW / T.O. A	Making available tippers and other vehicles on sanitation days.	Regular
6.	C.B.O's (Youth Clubs)	Assisting in wards clean up on sanitation days	Irregular
7.	NGO's (Boys Brigades, Scout, N.A.G/JNI)	Monitoring and enforcing non-movement during sanitation exercise (with police)	Regular, but ineffective
8.	City residents	Keeping their surroundings clean generally and turn out for the bi-monthly sanitation exercise	Poor

The TOA has reduced the number of tippers they make

available for the bi-monthly sanitation exercise from about 40 to about 15 due to the inability of the ESTF to fuel and use all fully. The CBO's too have stopped coming out for the bi-monthly exercise like they used to and are complaining of inadequate working equipment. They feel that not enough is being done to assist them, as they lack the necessary finance to buy the equipment they need.

Even the ESTF management feel that increased funding of the committee by government to buy equipment and employ more workers will yield better results than having to rely on others. Therefore, not much value is placed on the strategy.

3.6 PROBLEMS OF THE EXISTING MANAGEMENT FRAMEWORK

The limitations of the "partnership" strategy highlighted in the preceding pages to a large extent mirror the problems of the existing management framework, which are discussed below:-

1) The ESTF Committee lacks the management capacity to perform the task adequately. It is characterised by poorly trained staff and a weak administrative set-up. It is an ad-hoc committee charged with the serious responsibility of solid waste management, a task which it performs through a department which is technically under another agency.

2) The committee lacks long term planning capacity, as expectedly it's operations are ad-hoc. It has little or no data on the area and the characteristics of the population that it is supposed to cover. Some neighbourhoods are completely left unserviced.

3) The existing strategy does not put much premium on other stakeholders potentials especially the formal and informal private sectors activities in waste recycling. The 'partnership' strategy which relies heavily on community participation has also been waning, probably due to problems of coordination and roles assigned to the partners.

4) The committee is also faced with inadequacy of resources - financial, equipment and manpower. The sum of ₦300,000.00 monthly is considered too small to service and fuel old equipments that have since exceeded their service life span. The number of staff standing at 247 is also too low to serve a population of about 400,000.

5) Participation of the city residents has not been encouraging for some time now. The cooperation given the committee during the bi-monthly sanitation exercise has been reducing. Cases of indiscriminate dumping of wastes are increasing. The enthusiasm with which the CBO's used to attend to the exercise is also lacking.



Plate 1: Roadside dumping of waste along Emir Yahaya road, Sokoto



Plate 2: Old and broken down vehicles within the ESTF Committee premises



Plate 3: An illegal waste depot about to be cleared on sanitation day.



Plate 4: Waste being evacuated through the collaborative effort of ESTF staff (with payloader) and TOA staff (with tipper).

CHAPTER FOUR

SOCIO-ECONOMIC CHARACTERISTICS AND WASTE DISPOSAL PRACTICES IN THE STUDY AREA

4.1. INTRODUCTION

The spatial distribution of population, its size and its socio-economic characteristics to a large extent determines the amount of wastes generated and the composition of such wastes in an area. In this chapter, some socio-economic characteristics of household heads will be examined. The general waste disposal practices in the study area will also be examined.

4.1 POPULATION OF THE STUDY AREA

The National Population Census conducted in 1991 gives the population of Sokoto metropolis as 324,584. Using a growth rate of 2.83% the population presently stands at 390,082. The following table gives the expected population of the study area up to the year 2006.

Table 4.1.: Population Projections (Growth Rate = 2.83%)

Year	1991	1996	1998	2001	2006
Population	324,584	373,187	390,082	424,146	487,657

Source: National Population Commission, 1997

4.1.1 Population And Waste Generation

Population, (among other factor like urban growth standard

of living, consumption pattern and technology is one of the determinants of waste generation.

The population of Sokoto has been increasing, so also has the physical extent of the town. The 1963 population census put the population of the town at 89,817. By 1973 it had grown to about 137,000. Currently the population is about 400,000. The town has also grown in size covering 4,000 Ha in 1973, 12,500 Ha in 1983 to about 16,000 Ha in 1997.

4.1.2 Solid Waste Generation Rate in Study Area

An important step in solving the solid waste problem is to know its rate of generation. The average rate of Waste generation for Nigerians cities is 0.45kg per capita per day (UDBN, 1997). The lowest recorded rate is 0.25kg per capita per day for Jos while the maximum rate is 0.77kg per capita per day for Asaba. For Sokoto the rate of generation is 0.50kg per capita per day as shown in Table 4.2.

Table 4.2.: Per Capita Generation Rate for Some Nigerians Cities

	Rate/ca/day
Minimum generation rate (Jos)	0.25kg
Maximum generation rate (Asaba)	0.77kg
National Average	0.45kg
Generation rate for Sokoto	0.50kg

Source UDBN, 1997.

With a generation rate of 0.5kg per capita it is estimated that The population of about 390,082 produces about 195,041kg (195 tonnes) of solid waste per day. This add up to about 5,850 tonnes monthly. Out of this monthly generation it is estimated

that only about 3,024 tonnes is officially collected and disposed. The bi-monthly environmental sanitation exercise accounts for about 1,600 tonnes while the routine daily collection accounts for about 1,300 tonnes as shown in Table 4.3.

Table **4.3a: Wastes Officially Collected & Disposed Monthly in the Study Area.**

	Amount	% of Total
Routine(daily)Operation	1344	23.0
Bimonthly Sanitation with TOA	1680	28.7
Total Collected	3024	51.7
The amount un-collected	2826	48.3
Total waste generated	5850	100.0

Source: ESTF and Field Survey, (1998)

4.1.3 COMPOSITION OF SOLID WASTES IN SOKOTO METROPOLIS

It is important to know the composition and general characteristics of solid wastes in an area in order to know how best to dispose of it. The solid waste in developing countries contains more of organic matter (Urban Edge 1987),which according to Sanio (1998) accounts for a staggering 50 to 75 percent of the total waste stream. A survey conducted by the Urban Development Bank of Nigeria (UDBN) in 1997 corroborates this. Table 4.4a shows the waste composition characteristic for Sokoto and the national average.

Table **4.3b** **Solid Waste Percentage Composition by Weight in Sokoto and the National Average.**

Constituents	Percentage	
	Sokoto	National Average
Vegetable matter	27.17	25.52
Food remnants	0.70	4.25
Paper	6.55	10.24
Textiles	2.43	3.73
Plastics	5.48	7.59
Metals	1.22	4.08
Glass	2.87	2.78
Bones	2.18	1.26
Wood	7.43	2.63
Ash/Dust	36.89	21.27
Moisture	2.37	6.70
Miscellaneous	4.71	9.94
Total	**100.00**	**100.00**

Source UDBN, 1997

4.2 SOCIO-ECONOMIC CHARACTERISTICS OF HOUSEHOLDS IN SOKOTO METROPOLIS

Some socio-economic characteristics which could determine the nature and level of waste generation and disposal in the study area were measured. Indeed, as observed by Omuta (1988) the socio-economic structure of urban population is a determinant of the spatial structure of solid waste problems of our cities. The results are discussed in the following sections.

4.2.1 Educational Level

The survey revealed that about 30% of household heads have Qur'anic education as the only form of education, whereas 26% and 23% of household heads have been educated to secondary and primary school levels respectively. About 21% of household heads have been educated beyond secondary level, (see table 4.4). The result of the survey shows a fairly enlightened population.

Table 4.4: Educational Level of Household heads (in %)

Level of Education	Birni	T/Wada	S/Gari	GRA	Mabera	Ave.
Post Secondary	7	14	12	68	6	21
Secondary	13	44	30	22	19	26
Primary	29	17	39	7	24	23
Qur'anic	51	25	19	3	51	30
Total	100	100	100	100	100	100

Source: Field Survey, 1998.

4.2.2 Occupational Types

With regards to the occupational structure, the survey revealed that household heads are overwhelming self-employed, with 59% of them falling into this category. They are predominantly farmers and traders. This category predominated in all the zones, with the single exception of the GRA, where public servants are in the majority as shown in table 4.5.

Table 4.5: Occupational Types of Household heads (in %)

Occupation	Birni	T/Wada	S/Gari	GRA	Mabera	Ave.
Self-employed	59	58	70	34	72	59
Public servant	17	14	13	54	10	21
priv. Sector Employee	14	15	8	11	6	11
Unemployed	10	13	9	1	12	9
Total	100	100	100	100	100	100

Source: Field Survey, 1998.

4.2.3 Monthly Income Levels

Generally, majority of household heads earn between ₦2,000:00 to ₦5,000:00 monthly, representing 49%, while those who earn less than ₦2,000:00 monthly form about 35%. Only about 16% of household heads earn about ₦5,000:00 monthly (see table 4.6).

Table 4.6: Income Levels Of Household Heads/Months (in %)

Income (=N=)	Birni	T/Wada	S/Gari	GRA	Mabera	Ave.
< 2,000	46	33	28	10	58	35
2,000 - 5,000	40	56	57	55	38	49
>5,000	14	11	15	35	4	16
Total	100	100	100	100	100	100

Source: Field Survey, 1998

However, there are variations within the zones. The Birni and Mabera zones have the majority of their residents earning less than ₦2,000:00, while in Tudun Wada, Sabon Gari and GRA, the bulk of household heads, representing over 50% in each zone, earn between ₦2,000:00 - ₦5,000:00 (see figure 4.1). This has implication for any commercial waste collection or cost recovery drive.

4.2.4. Household Size

About 47% of households surveyed are made up of 4 - 6 people, 37% have more than 7 people, while the remaining 16% consist of 1 - 3 people as shown in table 4.8. Birni and T/Wada have more than 50% of their households with 7 people and above, while Sabon Gari, GRA and Mabera have 48%, 59% and 57% of their households with 4 - 6 people (see figure 4.2). The different population densities have implications on waste generation and

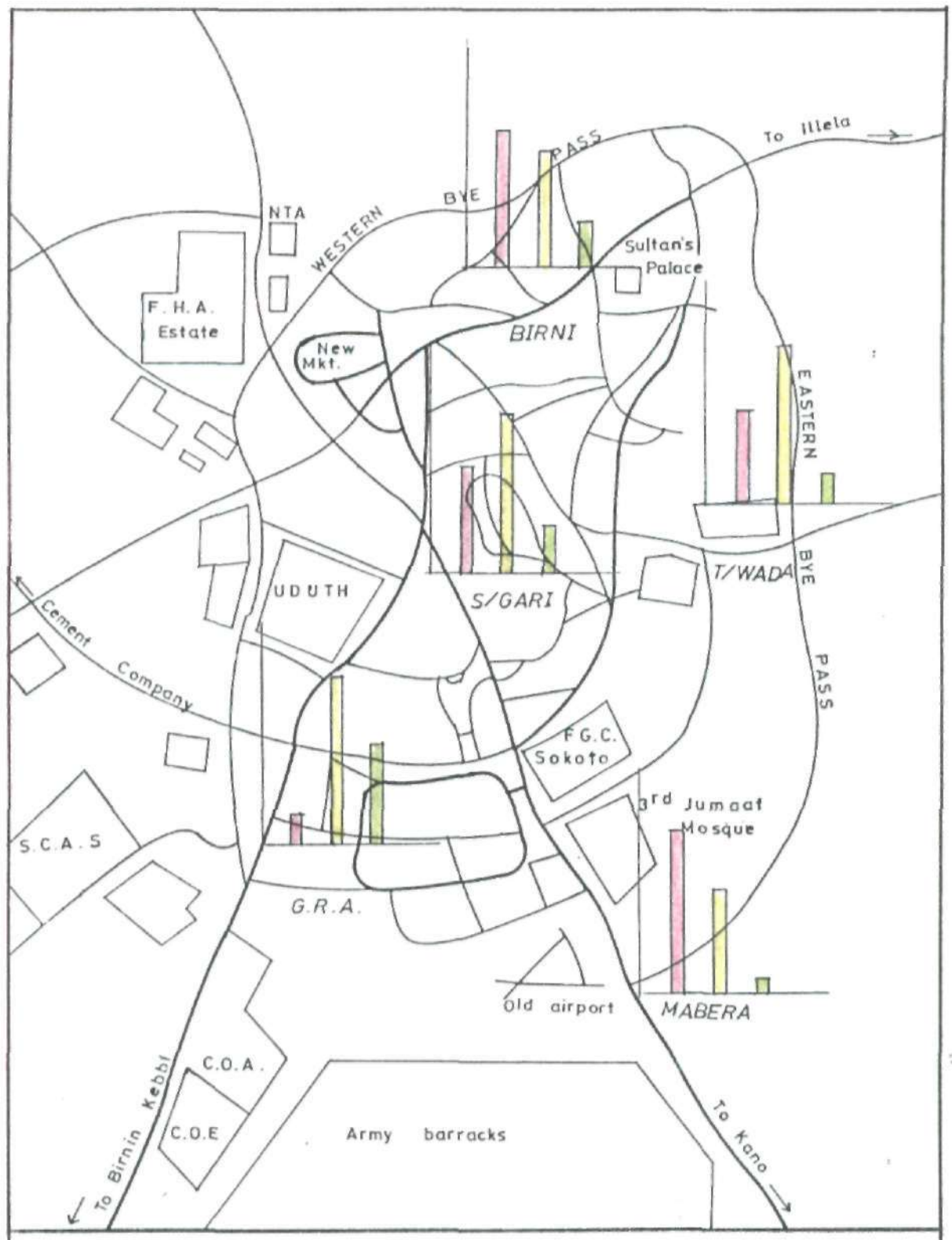


FIG. 4.1. VARIATION IN INCOME LEVELS.

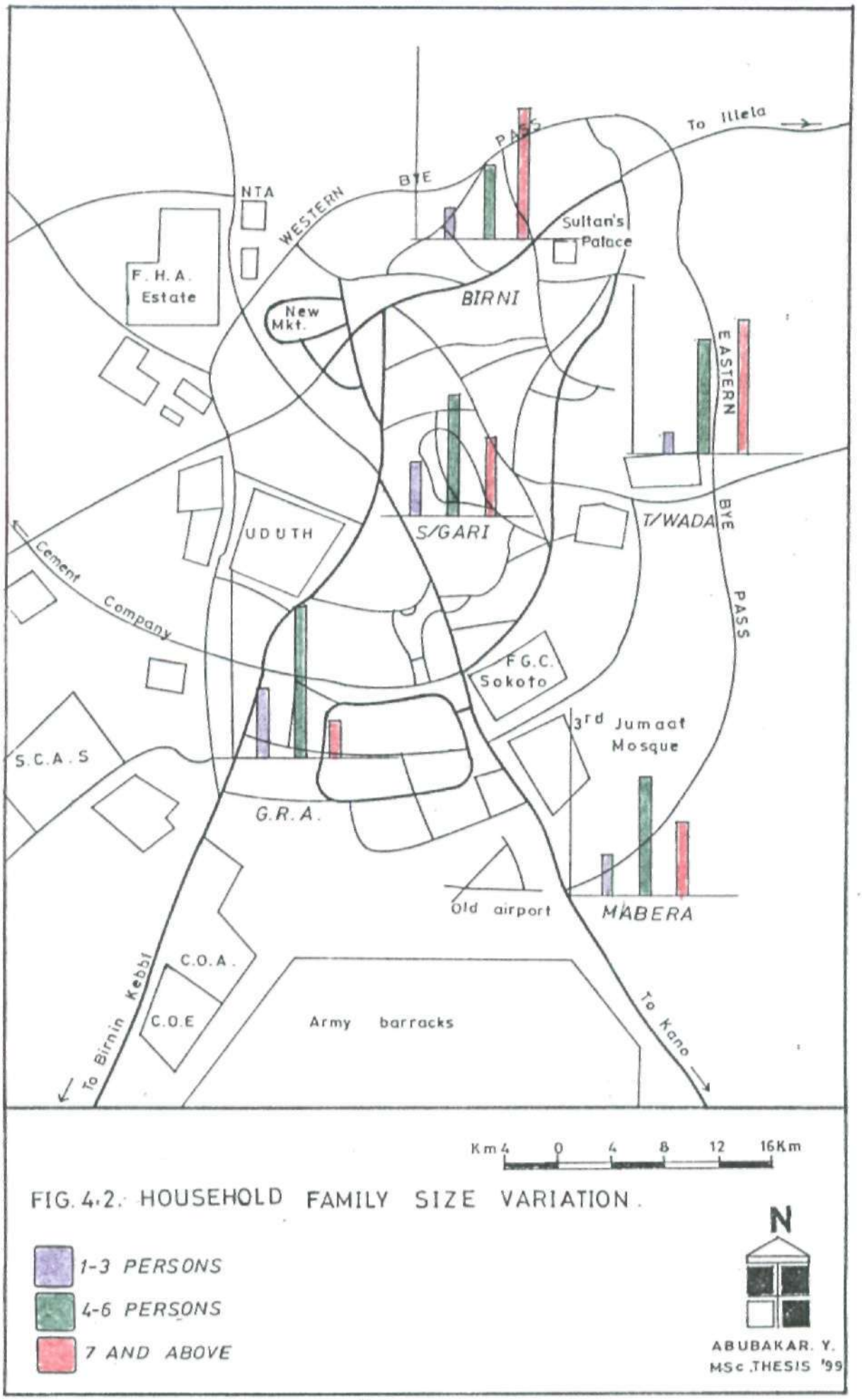


FIG. 4.2. HOUSEHOLD FAMILY SIZE VARIATION.

disposal.

Table 4.7: Household Family Size (in %)

No. Of People	Birni	T/Wada	S/Gari	GRA	Mabera	Ave.
1 - 3	12	7	21	26	15	16
4 - 6	31	42	48	59	57	47
7 and above	57	51	31	15	28	37
	100	100	100	100	100	100

Source: Field Survey, 1998.

4.3 WASTE MANAGEMENT PRACTICES AT HOUSEHOLD LEVEL

4.3.1 Method Of Storage In Households

How waste is handled at the household level is important and when properly organised constitutes the first step to effective management. For instance, promotion of waste sorting can start at household level by encouraging the use of separate receptacles for degradable and non-degradable materials. Encouraging households to store their wastes for a period of time can also help collection agency in scheduling their collection routine.

Results from the survey indicate that about 60% of households have one form of waste storage receptacle or the other, while the remaining 40% do not have any, (see table 4.8).

Table 4.8: Method of Storing Waste In Households (in %)

Type	Birni	T/Wada	S/Gari	GRA	Mabera	Ave.
Plastic	16	27	16	42	15	23
Empty Carton	36	16	24	21	19	23
Drum	4	8	18	23	12	13
Don't have	44	49	42	14	54	41
Total	100	100	100	100	100	100

Source: Field Survey, 1998

4.3.2 Frequency Of Disposal By Households

Knowing how frequently households dispose of their waste within a time period, say a week, can be used to plan collection within different zones of the town. Households can also be encouraged to bring out their waste on pre-arranged time to make it easier for collection.

From the survey, it was discovered that about 47% of households dispose of their wastes 2 - 3 times a week. This seems to be the predominant practice, particularly in the Birni and Tudun Wada zones. About 25% of the households dispose of their wastes every day, 14% once a week and another 14% 4 - 5 times per week (see table 4.9).

Table 4.9: Frequency of Disposal By Households

Times/Week	Birni	T/Wada	S/Gari	GRA	Mabera	Ave.
Once	11	21	15	18	4	14
2 - 3	56	57	40	46	37	47
4 - 5	13	3	16	8	21	14
Everyday	10	19	29	28	38	25
	100	100	100	100	100	100

Source: Field Survey, 1998

4.3.3 Method Of Waste Disposal By Households

There is a shortage of collection depots. There are only 232, and these are unevenly distributed. In some areas, none are provided at all. It is not surprising therefore, that only about 38% of households make use of the officially designated waste depots, to deposit wastes for collection. City wide, the survey revealed that about 46% of households dump their waste in open

spaces. In Mabera and GRA, about 65% and 52% of households use this method of disposal. The absence of the so called officially designated waste depots in Mabera (and other peri-urban settlements), and their limited number in the GRA, considering the spatial extent, is likely the reason for this high figures. Dumping in the backyard and burning account for 11% and 5% respectively (see table 4.10).

Table 4.10: Method Of Waste Disposal By Households

Method of Disposal	Birni	T/Wada	S/Gari	GRA	Mabera	Ave.
Approved depot	50	54	49	36	-	38
Open space	36	40	36	52	68	46
Burning	6	3	6	6	4	5
Backyard	8	3	9	6	28	11
Total	100	100	100	100	100	100

Source: Field Survey, 1998

4.4 PROSPECTS FOR COMMERCIAL COLLECTION AND DISPOSAL

One option open to governmental agencies for improving infrastructure service delivery is opening up such services for private sector participation. The rationale for privatisation is usually the deterioration of service delivery (Pirez 1994), but it is usually based on the ability to pay. Due to the deterioration of services and governments inability , privatisation is becoming an inescapable reality of present day urban management.

There are no commercial waste collection firms in Sokoto and there is also no provision for the registration of such firms by the ESTF Committee or SOSEPA. In order to investigate the viability of that, household heads polled were asked if they

could afford to pay for waste collection. About 38% said they could, while the remaining 62% said they couldn't as shown in table 4.11 and figure 4.3.

Table 4.11: Households Readiness For Commercial Collection

Responses	Birni	T/wada	S/Gari	GRA	Mabera	Ave.
yes No	37 63	35 65	31 69	54 46	34 66	38 62
Total	100	100	100	100	100	100

Source: Field Survey, 1998

4.4.1 Amount Affordable By Households

Not all the households that signified readiness for commercial waste collection are willing to pay the same amount. Results from the survey show that about 52% are willing to pay up to ₦50:00 monthly, while only 20% indicated their readiness to pay up ₦150:00 and above (see table 4.12 and figure 4.4). The survey indicate general apathy towards commercialisation of the service.

Table 4.12.: **Amount Affordable By Households For Commercial Waste Collection**

Amount(=N=)/Month	Birni	T/Wada	S/Gari	GRA	Mabera	Ave.
0 - 50	54	68	38	26	83	52
51 - 100	27	12	43	43	13	28
101 - 150	11	16	5	17	4	12
151 and above	8	4	14	14	-	8
Total	100	100	100	100	100	100

Source: Field Survey, 1998.

4.5 SATISFACTION WITH EXISTING WASTE MANAGEMENT SERVICES

There is widespread dissatisfaction with the existing services in Sokoto metropolis. About 56% of households are not

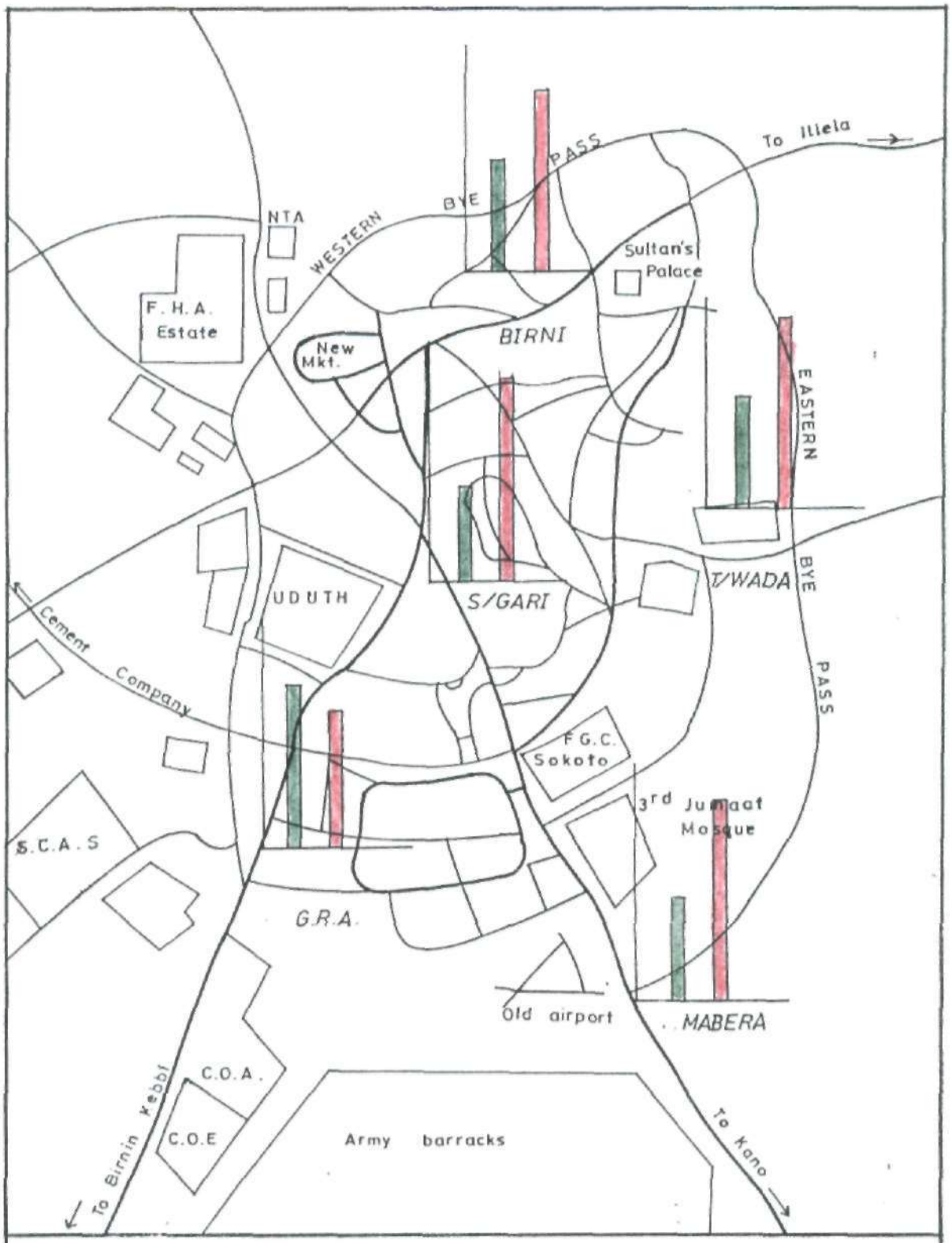


FIG. 4.3. HOUSEHOLDS READY FOR COMMERCIAL COLLECTION

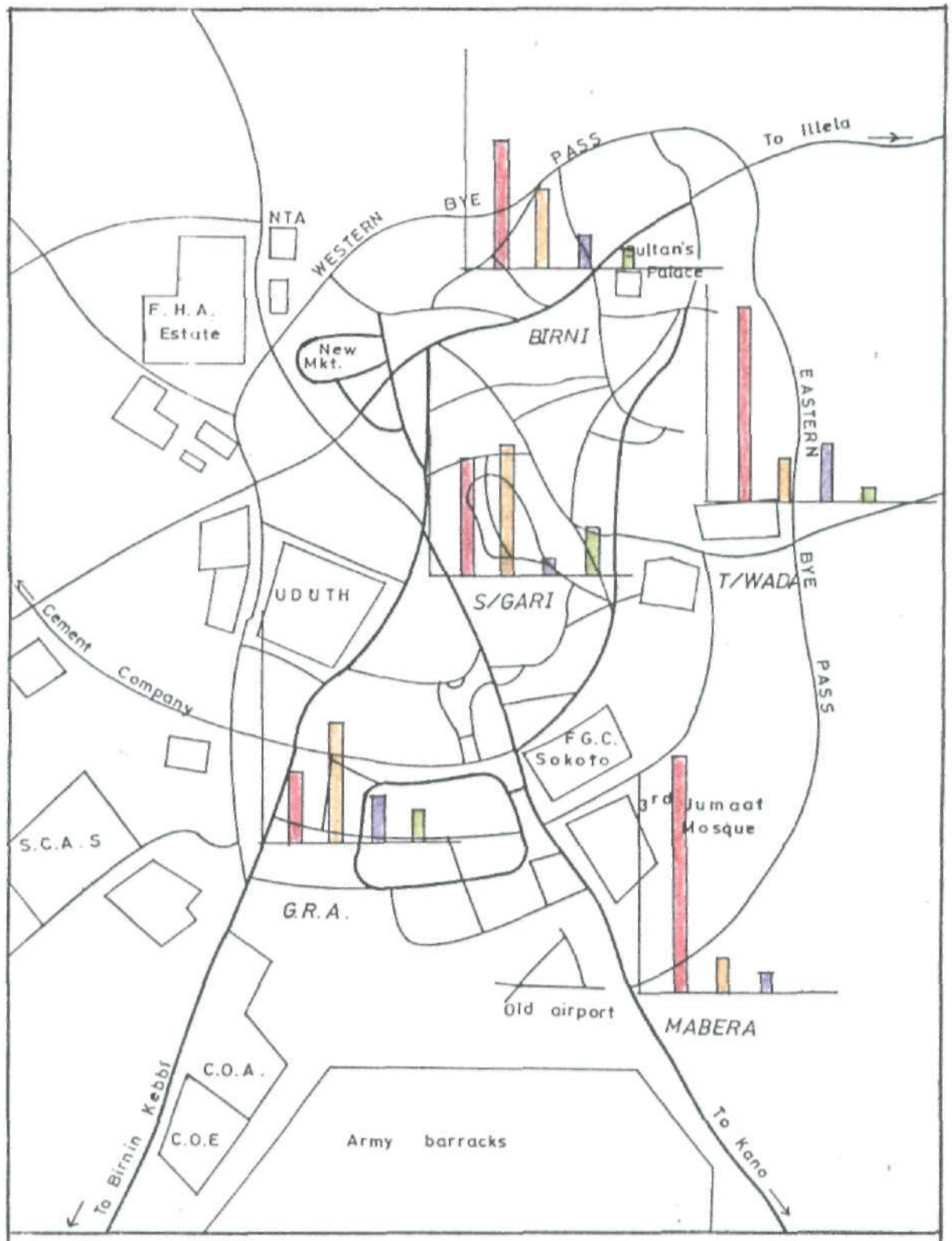


FIG. 4.4. AMOUNT AFFORDABLE BY HOUSEHOLD HEADS FOR COMMERCIAL WASTE COLLECTON.

satisfied with the way the ESTF Committee is managing the problem, while about 34% say they are. 10% would not comment. Table 4.13 gives further details.

Table 4.13: Satisfaction Level With Existing Services

Responses	Birni	T/Wada	S/Gari	GRA	Mabera	Ave.
Satisfied	37	36	37	52	10	34
Not satisfied	56	60	52	42	69	56
No comment	7	4	11	6	21	10
Total	100	100	100	100	100	100

Source: Field Survey, 1998.

4.6. SUGGESTIONS ON WAYS OF IMPROVING WASTE MANAGEMENT SERVICES

Respondents were asked to suggest ways of improving waste collection services in their areas. About 26% are of the view that buying more equipment and employing more labourers in order to increase frequency and coverage of collection will improve the service in their areas. About 34% feel that building more waste collection depots in their neighbourhoods will improve the situation. Majority of respondents in these two categories are from the Mabera zone where official coverage is almost non existent (see table 4.14). About 21% of household heads polled are of the view that poor public attitude have contributed to the present state of solid waste problems, and therefore suggest public awareness campaigns as a way of improving the situation in their areas. Other suggestions include enhancing the current bi-monthly environmental sanitation exercise, a view held by about 8% of respondents. Involving private collectors, and turning over waste management function to LGAs are views held by

about 5% and 2% respectively. About 15% did not offer any suggestions.

Table 4.14: Ways Of Improving Services

Suggestions	Birni	T/Wada	S/Gari	GRA	Mabera	Ave
More vehicles and staff	20	22	19	16	54	26
Build more waste depots	28	26	25	18	22	24
Public Awareness	19	24	31	29	5	21
Enhancing Environmental Sanitation Exercise	14	10	11	5	-	7
Commercial collection	3	-	-	23	-	5
Hand over to LGAs	6	4	-	-	-	2
No comment	10	14	14	-	19	15
	100	100	100	100	100	100

Source: Field Survey, 1998

CHAPTER FIVE

THE EFFECTIVE PARTNERS AND AN ASSESSMENT OF THEIR RESOURCES

5.0. INTRODUCTION

This chapter is concerned with identifying the effective partners in solid waste management in Sokoto metropolis, and assessing their resources. It is on the basis of the assessment that roles will be assigned to the partners in a new partnership strategy. The potential partners come from the public, the private and the community sectors as discussed below.

5.1. THE PUBLIC (GOVERNMENT) SECTOR

5.1.1. Health Department, SURPB Sokoto

It it through this department that the ESTF committee has been performing the function of solid waste mangement. Infact it has been the backbone of waste mangement services since SUDA took over the function from the Sokoto Local Government in 1976. its staff strength currently stands at 247. The department has five tippers, one tractor and one pay loader. A monthly subvention of ₦200,000.00 is provided to the department for servicing and fuelling of its fleet of vehicles and those obtained from the Tipper Owners Association (TOA) during the bimonthly sanitation exercise. The monthly subvention to the department comes in fairly regularly.

The staff, as earlier highlighted, are poorly educated and poorly paid. As discovered during the course of the study, these workers augment their poor pay by selling collected waste to farmers. They are particularly enthusiastic about covering the

old city (Birni), Sabon Gari and Tudun Wada areas where waste rich in organic content abound, whenever they can. But this is not always possible due to the inadequacy of equipment, which also keeps on breaking down due to old age and poor maintenance.

5.1.2 *The Sokoto State Environmental Protection Agency* (SOSEPA)

This agency came into existence through Edict No.10 of 1995, in order to implement and enforce FEPA's regulations in the state, with a view to maintaining good environmental quality. Its major functions in this regard include:-

1) Protection and sustainable development of the environment in the state.
2) In cooperation with public and private research units, collect and make available through publication and other appropriate means, basic scientific data and other information relevant to pollution and environmental protection matters in the state.
3) Make grants to NGO's and other bodies with similar functions for demonstration and for such other purposes as may be determined appropriate to further the purpose of the edict, and
4) Advice the state government on bye laws for protecting the state's environment to achieve sustainable development.

SOSEPA is represented on the ESTF Committee by the Director, Environmental Conservation Department who is a planner. The Director is supposed to be involved in policy formulation, but due to the ad hoc nature of operations, is not. The major point

of contribution of SOSEPA currently is therefore limited to public enlightment campaigns, which it does through seminars, workshops, production of stickers and poster on environmental sanitation etc. Funding for these activities has been inconsistent, but from a low of about ₦0.6 million in 1996 it has risen to about ₦1.2 million in 1998.

5.1.3 Sokoto Urban And Regional Planning Board (SURPB)

Like SOSEPA, the SURPB came into existence in 1995, through Edict No.19. It took over the functions of the defunct SUDA, but with an expanded mandate of urban and regional matters covering the whole state. Essentially, SURPB is charged with overseeing physical planning at urban centres as well as countryside to ensure sustainable settlement planning. It is represented on the ESTF Committee too, by the Director of the Town Planning Department. The SURPB pays the salaries of the Health Department Staff that work with the ESTF Committee in waste collection and disposal.

The SURPB is also supposed to play a strong role in policy formulation, but even though they share the same office premises with the ESTF, there are hardly any consultations between the two bodies, due to the leadership style of head of the committee who is a police officer. The SURPB however, makes available to the committee some of its equipment (one pay loader, one tipper and two tractors) during the bi-monthly environmental sanitation exercise. Its Engineering Department is also responsible for the maintenance of the committee's vehicles.

5.1.4 The Local Government Areas

There are five (5) local government areas that fall within the boundaries of metropolitan Sokoto. It is constitutionally their responsibility to handle the function of solid waste management within their respective areas of jurisdiction. They have their own respective Health Departments for that purtpose, but their functions have been taken over by the state, through the ESTF Committee, as they have been found to lack the capacity to handle it effectively. This is more so with respect to the core metropolitan LGAs of Sokoto North, Sokoto South and Wamakko. On the average these LGAs get about ₦3,000,000.00 monthly subvention each, with as much as about 60% going to recurrent expenditure. What is left therefore is hardly enough for any meaningful development.

The 5 LGAs are each made to pay the sum of ₦20,000:00 monthly (or ₦240,000:00 annually). Additionally, they make budgetary provision for their respective environmental sanitation committees, for even as they do not participate in day to day waste management in the metropolis, they are expected to take part in the bi-monthly environmental sanitation exercise. They are also known to assist the various CBO's that participate in environmental sanitation activities with equipment like wheelbarrows, shovels, rakes, cutlasses, brooms etc.

These LGAs are represented on the ESTF Committee, and are supposed to help in mobilising support for the environmental sanitation exercise at grassroot level, through the ward heads

in their areas of jurisdiction.

Table 5.1.:LGA's Budgetary Provision For Waste Management in the Study Area (1997)

L.G.A	ESTF's Levy	LGA's Sanitation Committee	Equipment For CBO's	Total
Sokoto North	0.24 m	0.12 m	0.08 m	0.44 m
Sokoto South	0.18 m	0.18 m	0.14 m	0.56 m
Wamakko	0.12 m	0.12 m	0.10 m	0.46 m
Dange-Shuni	0.24 m	0.24 m	0.05 m	0.53 m
Kware	0.24 m	0.24 m	N.A.	0.48 m

Source: Field Survey, 1998.

5.1.5 Family Economic Advancement Programme (FEAP)

The Family Economic Advancement Programme (FEAP) came into being on the 3rd of March 1997. Its main thrust is the alleviation of poverty in the Nigerian family, and encouraging self-reliance. One way it seeks to do this is through the provision of small scale loans for the formation of micro-enterprises. It is hoped that this will help in making proper utilization of available human and natural resources at our disposal in order to break the vicious cycle of poverty and unemployment in our society. Since its inception, about ₦6b has been earmaked for its operation nationwide.

The Sokoto state chapter has so far disbursed about ₦17 million to various cooperatives, with each getting between ₦150,000 - ₦500,000 to set up micro enterprises. FEAP can assist the existing informal sector operators in waste recycling with loans to enhance their operations. It can also assist the formation of new ones.

5.2 THE PRIVATE SECTOR

This consists of both the informal and formal. The informal sector is already involved in waste management through the activities of the scrap dealers and private individuals dealing in organic wastes. Farmers, who due to the escalation of prices of inorganic fertilisers are increasingly using organic waste for farming are also included here as stakeholders. Since there is currently no private commercial waste collection in the study area, some individual members of the TOA were assessed as potential private collectors. These are discussed below.

5.2.1 The Informal Sector

5.2.1.1 *Scrap Dealers Association*

This association consists of about 90 members that deal in scrap metal and plastic wastes. This association was formed around 1988. Typical of the informal sector, the association has a loose organisational structure with a Chairman as the leader and other officers like Vice-chairman, P.R.O., Financial Secretary, Secretary-general etc.

Members of this association get most of the scrap materials they sell from 'scavengers', who in turn retrieve them from the waste collection depots in the metropolis. Some of the scavengers are also able to get additional waste materials through door to door collection efforts especially in the GRA, which they sell to the dealers. The dealers have established outlets for their 'products'. The association is particularly useful in procuring and paying for the transportation of their



Plate 5: One of the CBO's in the study area on sanitation day.

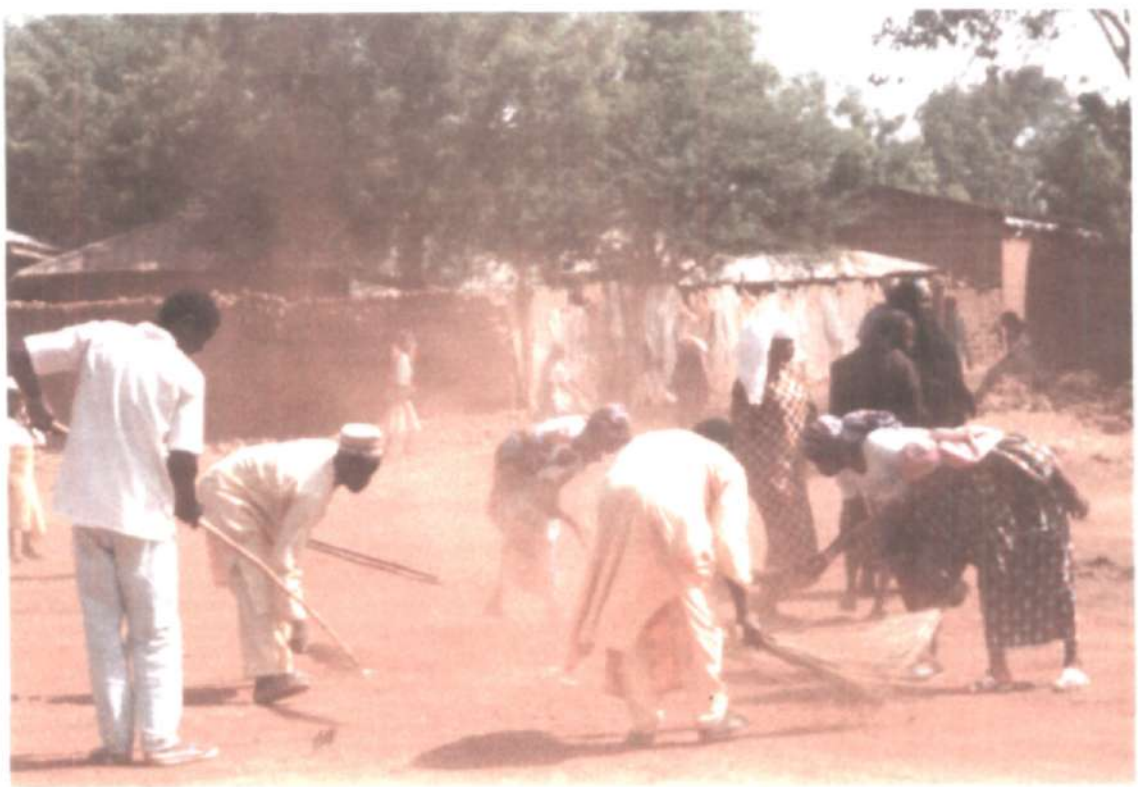


Plate 6: Ward clean-up exercise on sanitation day.

goods to the outlets, mostly industries, located in Kano and Ibadan. It costs the association ₦60,000:00 to hire a trailer to convey these goods to Ibadan. One kilo of plastics is bought from the scavengers for ₦7.00 while that of metal is ₦1.70 from their estimates the association is able to sell about 33 tonnes of scraps monthly.

5.2.1.2 Individual Dealers in Organic Wastes

Under this category, we have private individuals who hire tippers and go round the metropolis, particularly in the Birni and T/Wada area where they collect waste from the various waste collection depots which they sell to interested farmers. Some tipper owners are also involved in this business. These people have no known association, but their activities have been gaining more ground, with the prohibitive cost of inorganic fertiliser. A tipper load of this waste is sold for about ₦800:00. However, a lot of inorganic materials like plastics polythene bags broken glasses and bottles are contained in the wastes and these dealers do not take the pains of sorting these out before selling the wastes to farmers. The farmers do that themselves when they can.

5.2.1.3 Farmers

As earlier mentioned, a lot of small scale farmers found all over the metropolis have resorted to using wastes rich in organic elements like animal excrement, food remnants, dead vegetation etc to fertilise their farms due to the high cost of inorganic fertiliser. This has also been observed in places like Zaria and Kano. Even though the waste is predominantly organic, it also

contains inorganic materials, which the farmers go to a great deal of trouble to reduce, if not remove completely before using as organic fertiliser. Farmers therefore, stand to gain from the production of enriched organic fertiliser or even the sorting of inorganic from organic waste right from compound level.

5.2.2 The Formal Sector

5.2.2.1 The Tipper Owners Association (TOA)

This association's involvement in the existing waste management strategy has largely been in the spirit of public interest during the bi-monthly environmental sanitation exercise. As noted earlier in chapter three, its contributions have been invaluable to the operations of the ESTF Committee during the bi-monthly sanitation exercise, as more than 70% of all the wastes that get cleared officially is done with their tippers.

Individuals of the 16 member strong association hire out their trucks to private individuals who collect wastes and sell. At least one of the members is involved in the trade. Two members of the association polled indicated their interest in commercial waste collection. Any waste disposal commercialisation drive will necessarily target and involve this group. Between them, they own more than 60 tippers.

5.3 THE COMMUNITY SECTOR

This sector is made up of NGO's and CBO's and it is mostly through these organisations that any meaningful community contributions or efforts at developments are channeled and articulated.



Plate 7: Scrap dealers depot behind the old market site, Sokoto.



Plate 8: Waste sold and delivered to an interested farmer along the eastern by-pass, Sokoto.

5.3.1 Community Based Organisations (CBO's)

CBO's are groups that are formed to represent and protect local interests. These groups are known to possess creative energies in solving their communal problems, usually centred around sanitation, drainage construction, road repairs and security, among other social services.

CBO's in the form of the various youth clubs and other voluntary organisations are found in abundance within the study area. There are over 100 of them, but only about 49 are registered with the social welfare department. With respect to environmental sanitation about 19 are recognised as being active in terms of their contributions, especially during the bi-monthly environmental sanitation exercise. A typical CBO in Sokoto is headed by a Chairman, and assisted by a vice, other officers of the organisations include Secretary-general, Financial Secretary, Auditor, and the P.R.O. Others include Information Officer, Mobilisation Officer and Welfare Officer. Leadership style is usually loose and membership is open to all adults upon the payment of ₦50:00 registration fees. Members are also charged ₦5:00 weekly or ₦20:00 on monthly basis. Members may also be levied some amounts to execute certain projects as the need arise.

What this clubs are able to raise is typically to meagre to undertake any large scale projects. What they rely mostly on is their number to execute any labour intensive task ahead of them. With the exception of the Gawon Nama Youth Club, none of the

clubs sampled have been getting any support from philanthropists. Support from such quarters used to be reliable, but is now waning. The various local governments they fall under have also not been regular with the usual grants and support in form of working implements given to them. Table 5.2 gives a summary of data collected from sampled CBO's activities related to solid waste management.

Table 5.2.: CBO's Summary Of Findings Related To Solid Waste Management

Name of CBO/Location	SUMMARY OF DATA COLLECTED						
	Year of Formation	Membership Size	Sources of Finance	Equipment Available	Area of Operation	Waste Collected Monthly	Problems
Gawon-Nama Youth Club, -GRA	1982	156	Reg. Fees Dues, Levies Govt grants Donations Drama, etc	18 wheelbarrow 12 headpans rakes, shovels cutlasses brooms	G.R.A, Mabera Gwiwa Low cost	30 tonnes	-finance -Equipment -Inadequate support from LG.
Kungiyar YanGitta, -S/Gari	1978	100+	reg. Fees Dues, Levies Govt grants	Wheelbarrows Headpans, rakes, shovels cutlasses, brooms	S/Gari, Rijiyar Dowwa	10.5 tonnes	-Finance -Lack of cooperation from L.G.
Shukura Youth Social Club -Old City	1985	100+	Reg. Fees Dues, Levies Govt grants	10 haedpans, shovels rakes, brooms, cutlasses	Old City (Birni)	7 tonnes	-Finance -Equipment -Leadership
Da'a Youth Social Club -T/Wada	N.A	60+	Reg. Fees Dues, Levies Grants	12 wheelbarrow shovels, rakes brooms, cutlasses	T/Wada	- tonnes	-Finance -Equipment -Uncooperative attitude of members -Leadership

Source: Field Survey, 1998.

5.3.2 Non Governmental Organisations (NGO's)

A recent phenomena is the sudden propulsion of NGOs to high visibility in African development, such that not only have NGO's become development practitioners, they are seriously considered as being capable of accelerating the sustainable development process (Cheaka et al., 1998). NGOs are essentially based on the credo of voluntary action for the good of society, and with no profit motive behind their actions. They take off where government stops. They are supposed to be democratic with good internal structures and composed of professional within the society. But NGO's in Nigeria hardly fit the description of what NGO's are, and suffer from inadequate funding, poor internal organisational structures that are undemocratic and poor emphasis on environmental issues (World Bank, 1996).

There are currently about eleven (11) NGOs registered in Sokoto. The only ones involved in the existing waste management strategy are the Boys Brigade and Boys Scout and the Nigeria Aid Group (JNI). Their contribution is limited to monitoring the bi-monthly sanitation exercise. The only environmental NGO is the Giginya Community Environmental Protection Club (GICEP) and it is relatively new, as it was only formed in 1997. Membership is largely drawn from the ranks of middle level public servants. Presently, they have 53 members. The club is currently engaged in tree planting exercise in the metropolis in collaboration with the SOSEPA. Funding for their activities is derived from membership dues and levies, and the assistance they get from

SOSEPA. The other objectives of the club include the promotion of environmental cleanliness and public enlightenment on environmental issues. One way they hope to do this is through formation of environmental clubs in secondary school.

CHAPTER SIX

RECOMMENDATIONS AND CONCLUSION

6.0. INTRODUCTION

This research set out to evolve a participatory framework in dealing with the solid waste problem in Sokoto metropolis. In order to achieve this, the existing institutional and administrative framework as well as the existing strategy were examined. The stakeholders in solid waste management were identified and assessed. This was done with a view to evaluating them and finding appropriate roles for them in a participatory strategy that will be sustainable.

This concluding chapter is aimed at that, and opens with a summary of major findings, which is followed by recommendations for reforming the management system, and finally, proposals and role assignment to the various partners in the new partnership strategy.

6.1. SUMMARY OF FINDINGS AND OBSERVATIONS

1. In Sokoto metropolis solid waste management function has been taken over from the LGCs by the state and is currently being run by the ESTF committee, a clear usurpation of the LGCs responsibility which the agency has not been performing effectively.

2. The participatory strategy being tried by the state is good, even desirable in the present circumstances. But ideally it should be based on voluntary relationships, and assessment of the partners resources and capabilities. The attempt in Sokoto is not so, but rather coercive and adhoc. It is thus characterised by epileptic delivery of assigned roles to the `partners'.

3. There is no planning regarding how the waste generated in the study area is to be collected, i.e, it is ad-hoc and open to lobbying from influential people.

4. More waste is collected and disposed during the bi-monthly environmental sanitation exercise, resulting from the collaboration of the ESTF Committee, TOA and the various CBO's in the study area. This accounts for about 28% of monthly waste collection and disposal.

5. Some waste collection takes place informally through the activities of `scavengers', traders in scrap materials and private individuals that collect and either use or sell organic rich waste as fertiliser. Also, the sub-urban areas of the study area are largely ignored in the official waste collection schedule, and it is only through the informal activities that wastes are collected in these areas.

6. It is known by government that waste is being used in farming as alternative to the scarce and prohibitively

costly inorganic fertiliser. Yet, there is no encouragement for composting and production of organic fertilizer.

6.2. POLICY RECOMMENDATIONS

The need for a shift in management approach to accommodate participatory processes is not in doubt, for participation in infrastructure service delivery has been recognised as being critical to sustain ability. What needs to be done however, is to provide the operational framework to make it work regarding role assignment to specific partners. Recommendations on strategies to accommodate and enable this shift in approach are discussed below.

1. The ad-hoc ESTF committee should be scrapped as it has failed to address the problem effectively. Solid waste management is a Local Government function and should remain so. The LGCs should be empowered so that they can live up to their responsibilities. The state can, through agencies like SURPB, SOSEPA etc. assist in final disposals, coordination, policy formulation, capacity building etc.
2. There is the need for a change in attitude regarding the value of partnership with other stakeholders in solving the problem. The strengthen management system must mobilise and promote the formation of partnerships with private sector and the community, as they have their roles and can contribute to the success of the new strategy.

3. Room should be created for the participation of private waste collection firms through the necessary enabling provision for registration and regulation of commercial waste collectors.

4. The lack of a supportive legislative context is a constraint to governmental agencies capacity to incorporate participatory processes within the management system. This should be provided clearly spelling out each stakeholder's role.

5. Capacity building measures in the form of workshops, seminars, movies and other forms of public enlightenment campaigns should be undertaken for all categories of stakeholders from the public, private and community sectors in order to expose them to new skills, particularly in working with others as partners. Strengthening the management capacity is crucial to the success of the partnership process.

6. Recycling of waste should be promoted as a matter of deliberate management policy. Waste is actually a resource. This is a position held by many researchers i.e, Polprasert (1989), Pacheco (1992), Oso (1997), Sanio (1998)etc. According to Oso, using a substance called OBD-plus organic waste can be converted to fertiliser in 4 - 6 weeks. Recycling has several advantages. It helps rid the environment of waste in an ecologically friendly way and

people will gain materially. This is what Furedy (1992) called the management of waste in ways that combine social and ecological goals.

7. Useful partnership can be form between the informal sector and the LGCs/NGOs/CBOs especially in areas where the impact of the official waste collection coverage is hardly felt.

8. The separation of waste into degradable and non-degradable components should be promoted to aid recycling, through necessary incentives. Public education should be targeted at household level, being the primary source of waste generation.

6.3 PROPOSALS FOR A NEW PARTNERSHIP FRAMEWORK

6.3.1 The Guiding Principles

1. The new waste management strategy will essentially be based on the bottom-up approach. It will build on the existing informal and community based collection and disposal efforts, supporting them where necessary and link them to the formal collection system.

2. Decentralization of the management process and devolving the decision making processes and operational responsibility to more local bodies (the LGAs and NGOs/CBOs). This will enhance the bottom-up approach, and improve efficiency and demand responsiveness.

3. Clear division of responsibilities in relation to available resources and interests of each of the partners. This

implies ceding some functions to the partners that are best suited to perform them. All roles will henceforth be voluntary.

4. The introduction of cost recovery and cost minimization strategies like user charges, promotion of private commercial collection etc.
5. Clearly defined channel of communication to coordinate the functions of the partners and provide leadership.

6.3.2. The Partners and Their Roles

6.3.2.1. *The Public Sector*

6.3.2.1.1. The Five (5) LGAs

Waste management is their constitutional responsibility. Even within their limited capacity, they can, being at grass root level through adequate utilisation of the ward heads and community based groups perform their constitutional role. They are therefore to be responsible for the following:

a. Promote the acceptance and participation of people through the CBOs in solid waste management.
b. Assist the CBO's with equipment to enhance their activities in environmental sanitation.
c. In collaboration with CBOs, take over street sweeping function in their respective domains. Health and sanitary inspection should also be revived.
d. Carry out public awareness campaigns through the ward heads.

6.3.2.1.2. Sokoto Urban and Regional Planning Board (SURPB)

The SURPB through its relevant departments like Health, Town Planning and Engineering is to participate in the new strategy as a partner with other stakeholders in the following:

a- Policy formulation and preparation guidelines needed to energise the partners and mobilise their resources.

b- Capacity building programmes and coordination of activities in order to avoid duplication of efforts.

c- Liaise with LGCs to set up waste transfer stations at ward level for wastes sorting and recycling. The SURPB can undertake final disposal of remaining waste in collaboration with the respective LGCs.

d- Assisting the LGCs with basic planning data to ensure effective operations

e- Landscaping of open spaces to discourage indiscriminate dumping of waste.

6.3.2.1.3 Sokoto State Environmental Protection Agency

In furtherance of its basic aim of protection and sustainable development of the environment in the state, the role of SOSEPA will be:

a. Collaborate with the SURPB in policy formulation and bylaws for protection of the environment.

b. Assist NGOs and CBOs with environmental concern with grants or equipments for demonstration purposes in pursuance of a clean and healthy environment.

c. Conduct public awareness campaigns through mass media, seminars, production of posters, etc

d. In co-operation with research institutions, collect and promote scientific data on environmentally friendly practices for the abatement of pollution and environmental protection.

e. Initiation of programmes like micro enterprises formation in waste recycling through pilot programmes.

f. Registered and regulate private commercial waste collectors.

6.3.2.1.5. *The Family Economic Advancement Programme (FEAP)*

The basic function of this agency is poverty alleviation through granting of micro credit facilities to cooperatives. Its function in the new waste management strategy is therefore to assist in the formation of micro enterprises around waste recycling.

6.3.2.2. The Private Sector

6.3.2.2.1. *Commercial Waste Collection Firms*

Unlike the public agency which essentially undertakes waste management as public service the private firms are guided by profit motive. They are therefore to be involved in:

a. Collection of waste in households with the ability to pay.

b. Collection of waste on contractual agreement with SURPB in commercial areas.

c. Conduct public awareness campaigns through mass media, seminars, production of posters, etc

d. In co-operation with research institutions, collect and promote scientific data on environmentally friendly practices for the abatement of pollution and environmental protection.

e. Initiation of programmes like micro enterprises formation in waste recycling through pilot programmes.

f. Registered and regulate private commercial waste collectors.

6.3.2.1.5. *The Family Economic Advancement Programme (FEAP)*

The basic function of this agency is poverty alleviation through granting of micro credit facilities to cooperatives. Its function in the new waste management strategy is therefore to assist in the formation of micro enterprises around waste recycling.

6.3.2.2. The Private Sector

6.3.2.2.1. *Commercial Waste Collection Firms*

Unlike the public agency which essentially undertakes waste management as public service the private firms are guided by profit motive. They are therefore to be involved in:

a. Collection of waste in households with the ability to pay.

b. Collection of waste on contractual agreement with SURPB in commercial areas.

6.3.2.3. *The Community Sector*

6.3.2.3.1. *Non Governmental Organizations (NGOs)*

Strong, innovative independent and self supporting NGO's are lacking in the study area. The only environmental NGO suffers the same characteristics outlined above. Nonetheless, it can be useful in:

a. Public enlightenment campaigns, in concert with SOSEPA and CBOs to enhance community participation.
b. Promoting better waste disposal practices, like separation of waste, and formation of micro enterprises in waste recycling.

6.3.2.3.2. *Community Based Organizations (CBO's)*

CBOs abound in the study area. What they lack in sophistication and financial resources, they make up for in numbers and when properly motivated, enthusiasm. In collaboration with their various LGAs, they are to be responsible for:

a. Street sweeping and wards clean up on weekly basis or as determined by them.
b. In collaboration with the LGAs and NGOs build waste transfer stations in their wards based on requirements.
c. Promote separation of waste at household level and undertake further sorting at transfer stations and sell the recyclables to dealers to generate revenue.

6.3.2.3.3. *Individual Households*

The success of any strategy in solving the waste problem will depend on the level of public concern and willingness to cooperate and participate in the management process. For the success of the new strategy therefore, the cooperation of the city residents will be vital in the following:

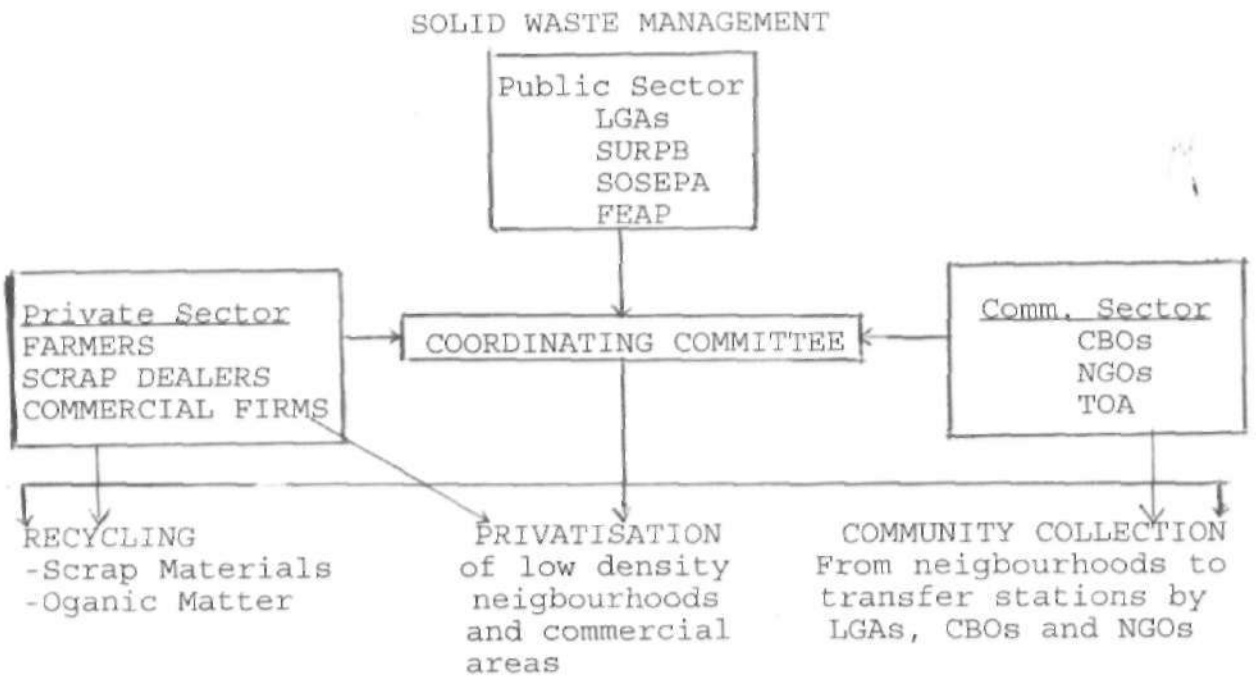
a. Sorting of waste at household level, into different containers for organic and inorganic waste.
b. Stopping of indiscriminate dumping of wastes, and
c. Presenting of waste at the earmarked transfer station on specified days.

6.3.3. The Coordination Committee

Coordination is important for without it the partners could end up working at cross-purpose thereby leading to wastage of scarce resources through duplication of efforts. For the new partnership framework to succeed, there is the need for a forum within the management system for the representatives of all stakeholders to meet and partake in decision making. They must join together to coordinate all activities in order to avoid conflict and duplication of efforts. A coordination committee, as shown in Fig.6.1 is thus proposed. It is to be chaired by the Director, Town Planning SURPB Sokoto, with membership constituting representatives of all stakeholders. The committee will be responsible for the following:

1. Effective interaction and information sharing between the stakeholders.
2. Coordinating and reviewing the roles assigned to the stakeholders from time to time in order to facilitate the activities of recycling, privatisation and enhanced community collection system as shown in figure 6.1.
3. Mobilization of resources (manpower, equipment and finance) to be used in meeting specific requirements of specific areas.

Figure 6.1: **THE FRAMEWORK FOR SOLID WASTE MANAGEMENT**



6.4 *CONCLUSION*

Worldwide, solid waste management is being transformed by national planning for waste reduction, the promotion of recycling and stakeholder cooperation (Furedy (1992). In Nigeria, this has not been the case. The situation got to its present deplorable

state because government has failed to give it the necessary attention it deserves. Informal and communal self help effort, and the potentials of other stakeholders have largely been ignored.

Recycling of waste as a disposal option offers a way out. Once it is promoted and appropriate division of roles for the identified stakeholders is decided, improvement will be recorded without further increase in investment by government. The proposed partnership framework for solid waste management in Sokoto can act as a starting point for organising various other partnerships to deal with urban infrastructure service management and delivery problems in areas like public toilets, drainage etc.

Attitudinal change in the system and the political will are vital in instituting sustainable partnerships. The roles of the various stakeholders are often complimentary. It must be accepted that there is a role for each stakeholder within a given community, and the contribution of each stakeholder however small, could make a difference.

REFERENCES

Adekunle, O.A. (1997) Cost effectiveness of conversion of urban refuse to organic fertiliser, paper presented at the National Training workshop on Rural and Urban Waste Management, Nation Women Development Centre, Abuja, August 1997.

Batley, R. (1994) Privatisation: Can government manage it?, The Urban Age; Privatisation and cities Vol. 2 No.4 p.3.

Benna Associates (1984) Sokoto Masterplan 1983 - 2003.

Cheaka, A.Y. and Florentine Nagbe (1998) NGO's and the Informal sector in Africa: What links and for what purpose? NGO file essay series no.2 London.

Cheema, G.S. (1996) Innovative Urban Management Practices The Urban Age; Innovation in Urban Management Vol.3 No.4 p.11.

Dedehouenou, I.H. (1998) Coping with House Waste Management in Cotonou. Environment and Urbanization; Sustainable Cities Revisited Vol.10 No.2 pp191 - 208.

DFID (1998) Building Urban Municipal Capacity for Community Participation. Urbanisation May 6 issue 1998; pp4-5. Dept. For International Development, London.

Ford, F. (1992) Critical Urban Management Issues, Developing Institutional Capacity. Ihs Newspaper 7(i):2-6 A Publication of the Institute for Housing and Urban Development Studies.

Foranda F. M.E. (1998) Chimbote's Local Agenda 21: Initiatives to Support its Development and Implementation. Environment and Urbanization; Sustainable Cities Revisited Vol. 10 No.2 Pp 129-148.

Furedy, C., (1992) Garbage: Exploring Non Conventional Options in Asian Cities Environment and Urbanization, Vol.4, No.2 pp42-61.

Gidman, P., Jan Blore, Jens Lorentzen and Paul Schuttenbelt (1994) Public and Private Partnership in Urban Infrastructure Management, UMP Working Paper No.4.

Landry, C. (1996) the Private Sector: An Afterthought?; The Urban Age; Vol.4 No.2 p.10.

Munasinghe, M. (1994) Overview: Protecting People From Hazards: Municipal and Industrial Waste, The Human Face of the Urban Environment pp79-86.

Omuta, G.E.D. (1988) Urban Solid Waste Generation and Management: Towards an Environmental Sanitation Policy and Environmental Issues and Management in Nigerian Development by P.O. Sada & F.O. Odemerho, Evans Brothers (Nig)

Oso, B.A. (1997) Introductory Address, National Training Workshop on Rural and Urban Waste Management, National Women Development Centre, Abuja, August 1997.

Pacheco, M. (1992) Recycling in Bogota: Developing A Culture for Urban Sustainability, Environment and Urbanization, Vol.4 No.2 pp74-79.

Polprasert, C. (1989) Organic Waste Recycling, John Wiley, London.

Pirez, P. (1994) Privatization: Changing the Nature of Buenos Aires, The Urban Age, Privatisation and Cities, Vol.2 No.4.

Sanio, M. (1998) Waste Not, Want Not, The Urban Age. The Global City Magazine, Summer 1998 pp18-20.

Schubeler, P. (1996) Paticipation and Partnership in Urban Infrastructure Management UMP vol.19.

Schutenbelt, P. and Jens Lorentzen (1994) Public-Private Partnerships in Municipal Infrastructure Service The Urban Age Privatization and Cities Vol.2 No.4 pp10.

Silas, J. (1992) Government-Community partnership in Kempung Improvement Programme in Surabaya, Environment and Urbanization Vol.4 No.2 pp33-41.

Smit, J. and Joe, Nasr (1992) Urban Agriculture for Sustainable Cities: Using Wastes, Environment and Urbanization, Vol.4 No.2 pp141-152.

Tamamushi, K., R.A. Goldsmith, P.R. White (1998) Applying Lifecycle Assessment to Waste Management in Asia; IETC-

work-book for Training in Adapting, Applying and Operating Environmentally Sound Technologies (ESTs) UNEP.

UDBN, (1998) Urban Solid Waste management Scheme (NationalStakeholders Consultative workshop) for PTF, November, 1998.

Urban Edge (1987) Solid waste Management. Reducing Costs; vol. ii, no.6, the World Bank.

UNCHS (1994) Sustainable Cities: Concepts and Application of A United Nations Programme; UNCHC Nairobi.

World Bank (1996) Human Development Report, Nigeria; UNDP Lagos.

Appendix I

Department of Urban and Regional Planning
Faculty of Environmental Design A.B.U. Zaria

Household Survey Questionnaire

Introduction

I am a post-graduate student of the Department of Urban and Regiona Planning, A.B.U.Zaria writing on a "Partnership Approach to Solid Waste Management in Sokoto", a purely academic exercise aimed at finding a lasting solution to the sollid waste management problem in sokoto.

All information given will be treated with confidentiality. Your honest opinion on the questions will be appreciated.

Thank You.

1. What is your occupation

   a. Public servant [ ] b. Private sector employee [ ]
   c. Self-employed [ ] d. Unemployed [ ]

2. Level of education

   a. Qur'anic education only [ ] b. Primary [ ]
   c. Secondary [ ] d. Post secondary [ ]

3. Number of people in household_____

4. Average monthly income

   a. Less than N2000 [ ] b. N2,000-N5,000 [ ]
   c. Above N5,000 [ ]

5. In what do you store your daily waste?

   a. Drums [ ] b. Plastic containers [ ]
   c. Cartons [ ] d. Others_____

6. How often do you dispose of your waste weekly?

   a. Everyday [ ] b. 2-3 times [ ]
   c. Once [ ] d. Others_____

7. Where do you normally empty your waste?

   a. Approved depot [ ] b. Open space [ ]
   c. Burning [ ] d. Gutter [ ] e. Others_____

8a. Do you pay for waste collection?

a. Yes [ ] b. No [ ]

b. If yes, huw much? _____

9a. If you are not currently paying, can you afford to pay for waste collection?

a. Yes [ ] b. No [ ]

9b. If yes, how much can you pay monthly?

a. Less than N50 [ ] b. N50-N100 [ ]
c. N101-N150 [ ] d. More than N150 [ ]

9c. If no, why can't you pay?_____
_____

10. Are you satistied with the existing waste services in your area?

a. Yes [ ] b. No [ ]

11. What do you think needs to be done to improve the service in your area?_____

Appendix II

Dept. Of Urban and Regional Planning,
Faculty of Environmental Design, ABU Zaria

Questionnaire for Agency Response for Solid Waste Management

Introduction

I am a post graduate student of the above named department writing a thesis titled "partnership approach to solid waste management: case study of sokoto", a purely academic exercise, aimed at finding a lasting solution to the solid waste management problem in sokoto.

Information given here will be treated with utmost confidence. Thank You.

1. Name of organisation _____

2. What are the functions fo your agency with respect to waste management?_____
   _____
   _____

3. How many vehicles do you have for waste collection?_____, How many are operational at the moment? _____

b. Specify the types _____, _____, _____, _____

4. How is collection done from the neighbourhood, is it by neighbourhood depots or house to house or both?
   _____

5. What is your staff strength? Please give a breakdown in terms of senior and junior staff and number of refuese surpervisors and labourers._____

6. How frequently is waste collected from the collection depots? _____

7. How is the collected waste disposed?_____

8. How is the town organized for collection of waste?
   _____

9. What is the estimated quantity of waste collected from each of the wards and the town as a whole?_____

10. Do you have an estimate of the following? If yes,, indicate:

    a. Population of the ward _____
    b. Income distribution by wards _____
    c. Quantity of waste generated per individual perday_____
    d. No. of refuse depots in each ward _____

11. What are your major constraints in performing your functions?_____

12. What do you suggest needs to be done to enhance your operations?_____

13. What is your policy regarding commercial waste disposal?

    _____

14. Have there been any appreciable contributions from members of the public and voluntary organizations in solving the solid waste problem?_____

15. What are the strategies adopted in chancing collaboration with other agencies in solving the solid waste problem?

    _____

    _____

Appendix III

Community Based Organizations (CBO's) in Sokoto

Kungiyar 'Yangitta
Tantabara Youth Social Club
Mariya ~ ~ ~
Gagi ~ ~ ~
Zama Lafiya ~ ~
Akija Progressive Union
Kungiyar Chi Gaban Matasan Minanata
Shehu Kangiwa Memorial Club
Kungiyar Ci Gaban Matasan 'Yan Goriba
~ ~ ~ ~ Rijiyar Dorawa
~ ~ ~ ~ Mabera
Gaskiya Dokin Karfe Youth Social Club
Majema Fata ~ ~ ~
Halba Mana Tudu ~ ~ ~
Falala Mana Babba ~ ~ ~
Umara ~ ~ ~
Umaru Alh. Muh'd ~ ~ ~
Gamji ~ ~ ~
Ni'ima ~ ~ ~
Da'a ~ ~ ~
Hamdala ~ ~ ~
Madalla ~ ~ ~
Ladama ~ ~ ~
Shukura ~ ~ ~
K.m.y. ~ ~ ~
Kungiyar Yan Albasa
~ Masu Maganin Gargajiya
~ Masu Kabu-kabu
~ 'Yan Lemu
~ Ci Gaban Matasan Tsamiyar Dila
Gandu Young Farmers Youth Social Club
Zabi Sonka Rima Radio ~ ~
Yan Aleru ~ ~
Mantaba ~ ~
Ansar Development Association
Kungiyar C.d.a Waziri 'A'
~ ~ Tudun Wada
Taimaki Kanka Da Kanka
Hadaddiyar Kungiyar 'Yan Alaru
Kungiyar Mutanen S/lemu
Imam Tsoho Abdullahi Shuni Club
Nazari Youth Social Club
Albarka ~ ~ ~
Zarumai ~ ~ ~
Alkawali ~ ~ ~
Salama ~ ~ ~
Gangaro ~ ~ ~
Zumunta ~ ~ ~
Gawon Nama ~ ~

Appendix iv

Tipper Owners Association (TOA) members

P.P. Madu
Alh. Sidi M. Asarakkawa
~ Bello Abdullahi
~ Altine Daudu
~ Umar Mai Roba
~ Bala Fari Maifata
~ Lamido Biranchi
~ Bello Dange
~ Garba Dikkon Gandu
~ A. Ummaru K/K
~ A. Dalhatu
~ Jelani Mabera
~ Bello Alkanchi
~ Mu'azu danjabalu
~ Sambo Ladan
~ Mamman Kwanna

Non Governmental Organizations (NGO's) in Sokoto

Kungiyar Gajiyayyu Da Marasa Galihu
Pilgrims Welfare Association (PWA)
First Aid Group of Young Muslims
Nigeria Aid Group (JNI)
National Council of Women Societies (NCWS)
Women Farmers Association
Nigeria Red Cross Society
Girls' Guide, Boys Brigade of Nigeria
Boys Scout
Nigeria Association of Women Journalist (NAWOJ)
Giginya Community Environmental Protection Club